THE

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NOVEMBER, 1863.

ELEVENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

According to adjournment, the American Pharmaceutical Association commenced its sessions at the Hall of the University of Maryland, Baltimore, on Tuesday, September 8th, 1863, at 3 o'clock, P. M.

The meeting was called to order by the President, William Procter, Jr., of Philadelphia; P. W. Bedford, of New York, Secretary.

Alfred B. Taylor, of Philadelphia, W. J. M. Gordon, of Cincinnati, and Samuel M. Colcord, of Boston, were appointed by the Chair a Committee on Credentials, and pending its action the members present were invited to enroll their names on the register.

The Committee on Credentials reported the names of Delegates appointed to attend the meeting as follows:

From the Massachusetts College of Pharmacy.—Thomas Hollis, Henry W. Lincoln, S. M. Colcord, Charles A. Tufts.

From the New York College of Pharmacy.—George C. Close, William Neergaard, John Meakim, Ferdinand F. Mayer, P. W. Bedford.

From the Philadelphia College of Pharmacy.—Edward Parrish, Charles Ellis, William Evans, Jr., George J. Scattergood, William R. Warner.

From the Maryland College of Pharmacy.—J. B. Baxley, L. Phillips, James Balmer, J. J. Thomsen, William S. Thompson.

Cincinnati College of Pharmacy represented by W. J. M. Gordon.

The Chairman of the Executive Committees not having yet arrived, the President requested Mr. Colcord, of that com-

mittee, to act as Chairman and present the names of candidates for membership.

The following list was then presented:

Thomas E. Kirby,	Baltimore.	Columbus V. Emick,	Baltimore.
S. Robinson Coale,	"	John F. Hancock,	"
Alonzo Lilly, Jr.,	"	Alexander H. Everett,	New York.
Wm. W. Cunningham,	"	Henry W. Schaffer,	Philadelphia.
Jonas Winter,	"	George M. Smyser,	"
E. Walton Russell,	"	C. Lewis Diehl,	"

A ballot being ordered, the President appointed John M. Maisch, of Philadelphia, and N. Hynson Jennings, of Baltimore, to act as tellers, who reported their unanimous election.

The roll was now called, and the names of those present noted by the Secretary.

Mr. Parrish, Chairman of the Executive Committee, having arrived, the names of the following gentlemen were presented as having been elected during the interim:

R. J. Toplis,	Yonkers, New York.
William F. Blocki,	Chicago, Illinois.
John C. Everson,	Philadelphia, Penn.
F. T. Whiting,	Great Barrington, Mass.
E. H. Price, M. D.,	Tamara, Illinois.
George P. Glazier,	Adrian, Michigan.
N. Crossman,	Waterloo, Canada West,
Richard Fener, Jr.,	Pittsburgh, Penna.

The Chairman then read the Report of the Executive Committee, as follows:

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee congratulate their fellow members on the favorable auspices under which we are again convened, and the encouragement furnished by the progress of events towards the establishment of the just authority of the Government, and the renewal of those relations of union and friendship, which, alone, can furnish a guarantee of permanent peace.

The preparation of the Minutes of the last Annual Meeting for publication, and the issue of the tenth volume of the "Proceedings," devolvod upon the Chairman of this Committee, and notwithstanding the utmost efforts were used to hasten the publication, occupied near three months from the time of our meeting. The printing was done as usual, in Philadelphia, while the proof-sheets of the elaborate Report, (144 pages)

on the Progress of Pharmacy were sent for correction to Prof. Maisch, its author, then a resident of New York. The Roll was revised by the Treasurer, while the other portions of the "proof" were submitted, as far as practicable, to those most concerned in their correctness.

An edition of a thousand copies was printed and bound in cloth, to correspond with the previous numbers; two separate Indexes belong to the volume, one general Index and one pertaining to the Report on the Progress of Pharmacy.

The Index to the first eight volumes of the Proceedings, prepared by direction of the Association, and directed to be bound in the present volume, is also included in it, making an aggregate of 380 pages.

The cost of printing and binding the work was,	$739·74
" of printing circulars, constitution, &c.,	6·25
" of indexing,	10·00
" of enveloping, packing boxes, postage, &c.,	39·84
	$793·83

The Treasurer has paid these expenses, as will appear by his Report. The few copies sold as far as reported, amount to $20.

The distribution of the Proceedings to the members, was through a few members residing in the large cities, and by mail, as heretofore, each paying 25 cents postage. The members residing in the States under protection of the Union forces, were generally supplied, some beyond the lines, and a few others, accidentally omitted, may yet claim their copies.

The stock of "Proceedings" stored in the Philadelphia College of Pharmacy, has not materially altered since the last report; it is nearly as follows:

For 1853,	250 copies.	1858,	bound,	97,	unbound, 309
" 1854,	57 "	1859,	"	95,	" 14
" 1855, out of print,		1860,	"	188,	"
" 1856, 42 copies,		1862,	"	368,	"
" 1857, bound, 29 copies.					
" " unbound, 289 copies.					

Other copies have been sent on sale to members in New York, Boston, Baltimore, St. Louis, Cincinnati, and we think that in each of these cities, and perhaps others, one member should be regularly appointed to receive, distribute and sell copies of the Proceedings of the Association; each of these distributors to make report to the Executive Committee annually, of the stock on hand; in this way we can keep advised of the condition of our stock—a matter which must become increasingly important, as the volumes become scarce and the demand for back numbers increases with the increase of the membership.

The gratuitous distribution of the volume to the Medical and Scientific Institutions and Periodicals in this country, has, we think, been too little

attended to, partly from want of definite instructions to the Committee. We believe that less than 50 copies have in any year taken this direction, while this must be regarded by all as the chief means of extending a knowledge of our Association.

Through the Smithsonian Institution, we sent about 40 copies to Foreign societies, periodicals and individuals interested in the Science and Art of Pharmacy.

Eight members have been elected during the past year by the Executive Committee; their names have been reported.

The Certificates of Membership, engraved and printed several years since, have nearly all been issued, and your Committee have but 22 copies in their hands; a few are deposited with the Treasurer; nearly 50 have been wasted by the mistakes in signing them, or by the signing of unnecessary numbers by the officers, in advance of their being required. It is believed that not a few of those applying for membership, have this diploma in view as a leading motive, and it has seemed to the undersigned, that great care is necessary, that unworthy individuals should not be placed in possession of so conspicuous a testimonial; for, although this certificate does not really carry with it any evidence of proficiency it may obtain for its possessor, more consideration from the uninitiated than the less showy diplomas of our Colleges of Pharmacy. In this view, the applications of some young and inexperienced pharmaceutists, who might by application become graduates in Pharmacy, have been discouraged by the Chairman of this Committee.

The annually recurring duty now devolves upon us, of revising our list of members, with reference to those who have passed from the present scene of probation. Of these we have been informed of as follows:

Charles T. Carney,	Boston,	Massachusetts.
David Roberts,	Boston,	Massachusetts.
Francis O. Bigelow,	Medford,	Massachusetts.
E. E. Knapp,	Norwalk,	Connecticut.
John P. Dodge,	New York,	New York.
T. C. McIntire,	Washington,	District of Columbia.
S. B. Waite,	Washington,	District of Columbia.
Asbury Kent,	Cincinnati,	Ohio.
G. Davidge Wood,	Baltimore,	Maryland.

Charles Tibbetts Carney was born in Lowell, Mass., Feb. 17, 1832. When a boy he chose the profession of Pharmacy, as congenial to his tastes and affording him the means of prosecuting the study of Chemistry, for which he early discovered a fondness. He commenced his career as a Student of Pharmacy, with the firm of Carleson & Hovey, in Lowell, where he continued till 1853, when he entered the Scientific School of Amherst College, with the design of pursuing his chemical studies. Some years afterwards he received the honorary degree of Bachelor of Science

from this College. He commenced business in Lowell, but in a few years removed to Boston, where he entered with zeal into the labors and responsibilities of the drug business, but with an unfortunate result; after six years of striving, he yielded to an accumulation of debt, and made an assignment for the equal benefit of his creditors. His feelings on the occurrence of so trying an event were those of a true man, and, in a letter to a friend, he speaks of the one consolation, "that there can be found no stain or shadow on my honor or integrity." His next recourse was to the profession to which his earliest choice had been given,—that of a Chemist. In March, 1862, he opened a laboratory for Experimental Chemistry and Analysis, which promised to be a highly successful business, but alas! our friend was not destined to enjoy the rewards of industry or enterprise, which now opened before him. The seeds of consumption, that invidious disease which carries off so many thousands in their youth and beauty, had been slowly, but surely, developing in his system. In August, 1862, he went to seek in the equable climate of Minnesota, a respite from the steady progress of his disease. He died suddenly from hæmorrhage of the lungs, on the 23d of September, 1862, at Pine Bend, Minnesota. His body was removed to Boston, and interred in the family tomb, under Trinity Church. In contemplating this awful event, we have the assurance from those who were cognizant of his state of mind, that the same unfaltering faith and trust in Providence, that supported him through so many hours of trial, never failed him, and in his illness he looked with perfect peace through the dark valley to the shining mansions beyond.

The reputation of our late associate, as a chemist, was, perhaps, rather local than general, yet our knowledge of him as a co-laborer in this Association, enables us to speak with confidence, both of his industry and capacity. We learn that at one time he was appointed on the Examining Committee, in Chemistry, at Harvard College, a well deserved acknowledgment of his scientific ability. We are informed that he was usefully and honorably connected with the investigation of the qualities of the Green Oxide of Chrome, as a tint for bank-note engraving, and by an original investigation, proved that this dye was not, as had been asserted, a complete safeguard against counterfeiting. This discovery was made at the instance of the Association of Banks, for the suppression of counterfeiting, by whom he was employed as a chemical counsellor.

Our friend became a member of this Association, in 1853, the first year of our meeting in Boston, and soon became actively concerned in its affairs. Several of his original papers appear in our published volumes of "Proceedings," of which none have attracted more attention than his Reports on Home Adulterations, read at the Annual Meetings in 1859, and 1860.

As Chairman of the Executive Committee, in 1859, he superintended the voluminous publication of the volume of that year.

Not by his zeal and ability as a Chemist and Pharmaceutist merely, but by his excellence as an associate and friend, are we led to mourn the death of Charles T. Carney, one of the youngest, most gifted and best beloved of our members.

David Roberts, of Boston, died suddenly of cholera morbus, in August, 1863. Though a practical pharmaceutist, he was also a graduate of medicine. He is spoken of by his brethren of the profession in that city, as a good apothecary and an honest man; though he took no active part in the movements in progress, for the improvement of our profession, he connected himself with this Association in 1858, and was an example of probity to those with whom he came in contact. He died at the age of 35.

Francis O. Bigelow, of Medford, Mass., fell a victim to consumption. He had been a traveller in pursuit of health, in Texas, but returned to his home to die. He is represented as a man of excellent character, intelligent and much interested in the progress of pharmacy, of which he was himself a good practitioner. He was much esteemed for honesty and a gentlemanly deportment, which endeared him to those who knew him. His connection with this Association, dates from 1859.

Edwin E. Knapp, of Norwalk, Connecticut, late of the firm of Knapp & Lynes, died on the 13th of August, 1862, of pulmonary consumption. He was born on the 16th of June, 1820, and became a member of this Association in the year 1860.

John P. Dodge, of New York City, who became a member of the Association in 1857, was a victim to the present gigantic struggle for the maintenance of the Union; he was a Captain in —— Regiment, of New York State Volunteers, and fell mortally wounded while leading his Company in the attack on Fredericksburg, under Gen. Burnside. He was buried with military honors by the city authorities of the City of New York.

Your Committee regret that these sketches of our departed associates are so meagre, through the want of information in relation to their character and circumstances, and hope that succeeding committees may be better informed in regard to those who may be added to the list of the departed hereafter. Respectfully submitted.

Special Reports being in order, that on the Sale of Poisons was called for, but the Chairman, S. M. Colcord, stated that no report was ready, and that the Committee were discouraged from attempting one further than had been done.

The Chairman of the Committee on the Drug Market signified his readiness to report to-morrow.

The Chairman of the Committee on Progress of Pharmacy was ready to report to-morrow.

The Report of the Committee on Queries for 1864 was also ready.

It being now in order to appoint a committee for the nomination of Officers to serve during the ensuing year, the delegations present selected, in accordance with the Constitution, the following members :

Samuel M. Colcord,	Boston.
John Meakim,	New York,
William Evans, Jr.,	Philadelphia.
J. Brown Baxley,	Baltimore.
W. J. M. Gordon,	Cincinnati.

The President then added the following :

Alpheus P. Sharp,	Baltimore.
Edward R. Squibb,	Brooklyn.
Edward Parrish,	Philadelphia.

On motion, the name of the President was added to this Committee, which was adopted.

On motion of Mr. Parrish, which was adopted, it was Resolved to hold three sessions on the following day, the hours to be designated hereafter.

The President then read his Annual Report, as follows :

ANNUAL REPORT OF THE PRESIDENT, 1862—63.

Gentlemen of the Association :—

The period has arrived when in the fulfilment of a Constitutional requirement, it is my duty to address you in reference to the several subjects which should justly claim our attention at this, our Eleventh Annual Meeting.

The condition of political affairs since our last Convention in Philadelphia has been so disturbed, the current of the public mind so much diverted from its usual peaceful channels by the untoward accompaniments of war, it can hardly be expected that our members should be so far exempted from the common lot, as to have carried out the various special labors assumed a year ago; yet it is with no ordinary feelings that I congratulate you, fellow members, on the shaping of events by which we are enabled once more to convene together in this large city, in the pursuit of the laudable and useful objects of our National Association, and to indulge the hope that, before our next annual meeting, our afflicted country may emerge from the storm clouds and gloom which have so fearfully enveloped her, and the blessings of peace once more return throughout her ancient borders.

Ours is a peaceful profession, yet when the calamities of war assail, our aid is among the first invoked; consequently a large number of our members or their subordinates have been drawn into the service of the medical corps of the army. This is a cogent reason for the limited attendance of our members, and which will cease with the return of peace.

In the interim between the meetings, the vitality of the Association asserts itself through the EXECUTIVE COMMITTEE, from whose Report we have already had an outline of the labor performed during the year. The importance of having this Committee carefully constituted cannot be overrated. The amount of labor to be performed is large, its usefulness great, and its continuance in some respects unremitting. A degree of enthusiasm is needed to carry it through successfully, and no one expecting a sinecure should be placed in the Chairmanship. The editorial duty appertaining to this office, calls for a special qualification, and so long as the Constitution devolves upon its incumbent the preparation and publication of the Proceedings, he should be chosen mainly with a view to this important service. It is believed that a code of rules for the guidance of the two great Standing Committees of the Association would prove a valuable aid to them in the performance of their several duties.

The limited number of applications for membership during the past year is what might have been expected. It will be well to reconsider that portion of the Constitution by which members are created in the interim, and see if more affectiveness cannot be given, as regards the determination of the qualification and standing of the applicants, and in shortening the routine now required. It is the duty of the Executive Committee to hold custody of the Property of the Association, which, at this time, is solely of a literary character. It is information interesting to the members, and useful to his successor, when the Report of the Chairman of that Committee is accompanied, as in the present instance, by a list of the property in his charge; and whilst a list of the documents which are independent of the published Proceedings should not be required, it should be expected that this portion of the manuscript archives of the Association should be regularly kept in order, and annually reported as in proper condition for transmission to the next Committee.

The TREASURER will report to you on the condition of the finances of the Association, during the past year. The funds have been more than equal to the needed expenditure, leaving a handsome balance to go with the contributions now due, to meet the outlays arising from the present meeting.

The labors of the "Committee on the Progress of Pharmacy" will be laid open for your inspection at an early period in the future sessions of this meeting. The Annual Report on the Progress of Pharmacy has always possessed considerable interest, but during the last three or four years it has assumed a form which gives it a prominent place in the Proceedings, as a record of observations and discoveries.

At the meeting in New York, (1860), the retiring President suggested that the duties of this Committee should be divided amongst its members, so that each shall make a special report on a particular branch of the subjects of inquiry. If I understood the suggestion, it was not proposed to reconstruct the Committee, but only to apportion the subjects, so that, for instance, whilst the Chairman should make out a regular general Report, or resumé of the Journals, one member, say the Corresponding Secretary, should report on the pharmaceutical institutions at home and abroad; another on the literature of pharmacy and chemistry, evolved during the year; a third on the novelties and improvements in shop practice with a special view to extemporaneous and fancy pharmacy, and the last should have charge of the whole subject of toxicology as it interests the apothecary, so far as to report on—1st, cases of poisoning and antidotes used; 2d, on legal enactments just passed or on the working of old laws; and lastly, any suggestions that may arise bearing upon the subject. In this way each member of the Committee by having a distinct sphere of action and responsibility would be incited to greater industry, and the Chairman, by confining his attention to the general record of Pharmaceutical Progress, could give a more complete and well digested Report. To guard against the failure of the other members of the Committee to report, it would be safe to require the subsidiary reports to be handed to the Chairman, at least two weeks before the meeting occurs, so that in the event of inability, or other causes of failure on the part of his colaborers, the Chairman may have time to supply the deficiency as far as possible.

The Committee on the Drug Market has not been idle during the interim. The indefatigable Chairman of that Committee, despite his pressing engagements, has found time to prepare a report, which will be found to possess considerable interest, and is the first of the series which may be looked for from this new Standing Committee, in the future progress of the Association.

The appropriate duties of this Committee were not pointed out in the minute of its appointment. Its action may become exceedingly useful if rightly directed and perseveringly pursued; or it may be productive of no good results. That success should attend it, the Chairman should be so situated near the principal foreign drug trade and manufacturing marts, as to have the necessary opportunity through the entire year to get access to the facts, and his coadjutors should be selected, both by location and ability, with a view to the work. To speak of the Drug Market in a way to be useful to the reader, the Report must be practical—the result of inquiry, observation, and experiment. It should inquire what is in the Market—how it gets there—and what is its condition as to quality and purity, noting all adulterations and sophistications; and lastly, it should include a tabular view of medicinal imports and indigenous medical products, with such a sketch of the statistics of pharmaceutical and

chemical manufacturing as a proper history of the Drug Market justly calls for.

The Committee on a "List of Queries for Investigation," having had a sufficient time to make a well digested report, it is to be expected that a more careful selection has occurred than hitherto has been possible from the hurried manner of the service during the sessions.

The suggestion of subjects for prizes, which also comes within the scope of this Committee, requires careful consideration. In giving a direction to the talents of original investigators, the actual usefulness of the results sought, should be more conspicuous than their mere scientific interest, although this should by no means be overlooked, so that direct benefit may accrue to our profession.

At last accounts from the Chairman of the Committee on Poisons, which was appointed in 1860, the prospect of a Report was extremely doubtful.

In reflecting on that clause of the Constitution relative to life membership, the question has arisen, how is the Association to be supported in the future so as to meet the natural increase of its expenses? The support of the Body is virtually thrown on a new set of members every ten years. Assuming that our present income is just sufficient to carry us on, we must necessarily ten years hence have just double our number. Where then is the margin for prizes, and other extraordinary outlays? Will it not be wiser to reduce the annual subscription to *one dollar* after ten years membership, so that the sum will cover the cost of a copy of the Proceedings due to each member, and give a reserved pecuniary power for the future?

It is not incompatible with the duties of this occasion to occupy a few minutes with our National Pharmacopœia. After a lapse of more than three years. The Committee having charge of the revision and publication of that work, have completed their labors, and it is now fairly before the pharmaceutists of this country. It is believed that in most respects it is the most complete Pharmacopœia we have had, and justly merits the study of every apothecary. It is time, gentlemen, that our practitioners of Pharmacy, of every grade, should *know* that we have a United States Pharmacopœia, by personal inspection. Hundreds, perhaps thousands, have never seen the work and know of it only through the several commentaries, and more particularly that in the U. S. Dispensatory, which is often confounded with the Pharmacopœia. The Committee, at the express recommendation of the Convention at Washington, have had the price put so low ($1) that no excuse can possibly exist on the score of expense, and to give encouragement to its general dissemination, it is recommended that a resolution be brought forward by the Business Committee, if they approve of it, urging on the members of this body and on pharmaceutists and druggists generally, that they acquaint themselves with it by

personal study with the intention of adopting its formula, and of giving greater uniformity to officinal preparations.

Before closing this Address, I would fain reimpress on you, fellow members, the need we have of more earnestness—I might say enthusiasm—in order to carry forward the several objects of our consociation with zeal and success. Already our National Association, through its Proceedings and manner of organization is attracting notice abroad, and our colaborers there are looking to us for fruits proportioned to the profession we make. Let us then individually interest ourselves in the work of progress—each in his own way; and by well directed efforts at home, among our fellow pharmaceutists, let us increase our numbers so as eventually, if possible, to include all the better qualified and liberally disposed pharmaceutists and druggists in the whole country. That our Association has been able to keep up its organization in the face of the discouraging circumstances which now surround it, is, to me, gentlemen, a strong evidence of its vitality, and leads to the assurance that when peace once more smiles upon us our Society will, with a due amount of *esprit de corps*, become an honor to American pharmaceutists, and command the respect of our brethren everywhere.

Having now presented the several topics which have appeared appropriate for the occasion, it remains for me, gentlemen, before vacating this Chair, which your partiality has placed in my keeping during the past year, to express to you that I have had a just appreciation of your confidence, and a sincere wish to merit your approbation.

WILLIAM PROCTER, JR.

On motion of Dr. Squibb, it was resolved, that when this meeting adjourns, it be to meet to-morrow morning at 9 o'clock.

The following Resolution was presented and adopted:

Resolved, That the Professors of the University of Maryland and of the Maryland College of Pharmacy, be invited to take seats in this meeting during its sessions.

The meeting then adjourned.

Wednesday September 9th—Second Session.

The meeting being called to order by the President, the Secretary read the Minutes of the preceding meeting, which were adopted.

The Executive Committee presented the names of the following gentlemen for membership, which were then balloted for and duly elected:

Henry J. Weber,	Philadelphia.
Talbot C. Murray,	"
George F. H. Markoe,	Boston.
George J. Waugh,	Canada West.
Elisha H. Perkins,	Baltimore.

The Nominating Committee reported the following names for Officers and Standing Committees during the ensuing year, viz.:

For President.

J. FARIS MOORE,	Baltimore.

For Vice-Presidents.

JOHN M. MAISCH,	Philadelphia.
CHARLES A. TUFTS,	Dover, N. H.
GEO. W. WEYMAN,	Pittsburgh, Pa.

For Treasurer.

J. BROWN BAXLEY,	Baltimore,

Recording Secretary.

WILLIAM EVANS, Jr.	Philadelphia.

Corresponding Secretary.

P. W. BEDFORD,	New York.

Executive Committee.

ALFRED B. TAYLOR, *Chairman*,	Philadelphia.
ALPHÆUS P. SHARP,	Baltimore.
FREDERICK STEARNS,	Detroit.
M. H. GLEASON,	Boston.
WM. EVANS, Jr., *Ex-officio*,	Philadelphia.

Committee on the Progress of Pharmacy.

GEORGE J. SCATTERGOOD, *Chairman*,	Philadelphia.
GEORGE C. CLOSE,	Brooklyn.
JAMES T. KING,	Middlet'n, N. Y.
N. HYNSON JENNINGS,	Baltimore.
P. W. BEDFORD, *Ex-officio*,	New York.

On motion, a ballot was ordered for President and Vice-Presidents, when the tellers reported their unanimous election.

On motion, the President was requested to deposit an affirmative ballot for the remaining Officers and Committees; when the tellers reported their election.

The retiring President then invited the President and Secretary elect to occupy their respective Chairs.

President Moore, on taking the Chair, made the following brief remarks:

Gentlemen of the Association:—

In choosing me to preside over this meeting you have paid the highest compliment to one of your youngest members, an honor which I duly appreciate. Although ignorant of many parliamentary usages, and feeling the responsibility resting on me as the successor of such men as Meakim, Colcord, and Procter, I shall endeavor to discharge the duties you have placed upon me to the best of my ability, and earnestly crave your indulgence with any short-comings.

Joseph Roberts, on behalf of the Pharmaceutists of Baltimore, invited the Association to take part in an excursion down the Bay, on Thursday afternoon, which was accepted.

The consideration of the Treasurer's Report of the last year being called up, it was read and accepted. On motion, the Chair appointed John Meakim and James T. Shinn a Committee to audit the Report.

[From this report we learn that the Association is free from debt, and that there is a balance on hand of $498·34. The receipts during the past year show a slight increase, but the expenses have been much larger than ever before, and should the same ratio continue for more than a year or two, the Treasurer recommends care in regard to future measures requiring expense. A full statement of receipts and expenses were appended.]

The Report of the Committee on the Progress of Pharmacy being called for, it was read, in part, by Prof. F. F. Mayer, Chairman, who stated that it commenced with the date of the conclusion of Prof. Maisch's Report last year. It was accepted, and referred to the Executive Committee for publication.

Edward Parrish, in moving this disposition of the Report, commended the labor and preseverance required in its preparation, and believed that the acknowledgments of the Association were due to the authors of the reports which have been received from this Committee for several years.

The Report of the Committee on the Drug Market being in order, it was produced and read by the Chairman, Dr. E. R. Squibb. This Report was illustrated by several specimens and indicated the expenditure of much labor. The Report was accepted and referred to the Executive Committee for publication.

John M. Maisch, in connection with the subject of the Report, presented a specimen of Benzoin, which came from a respectable drug house in New York, consisting of chips of wood agglutinated by some resinous substance, containing not a trace of benzoic acid, and but a slight trace of cinnamic acid. He stated that it had been sold to perfumers.

William Procter, Jr., from the Committee to bring forward queries for investigation, read a Report, which, on motion, was accepted, and the Committee continued to obtain the names of members willing to accept subjects for investigation, to be reported on next year.

J. J. Thomsen presented a communication from William Saunders, of London, Canada West, accompanying samples of Canadian pharmaceutical manufactures. He also introduced to notice sundry preparations, which had been received by him for exhibition at this meeting, from H. T. Cummings, of Portland, Maine, from James S. Aspinwall, of New York, W. R. Warner, of Philadelphia, and others.

The Committee appointed to audit the Treasurer's account reported that it was correct, and they were discharged from further service.

A communication was received from the publisher of the Chemist and Druggist, London, accompanied by 20 copies of the last number of that Journal, asking that the Proceedings of the meeting might be forwarded for publication.

On motion of the Chairman of the Business Committee, the letter was accepted and referred to the Corresponding Secretary, with directions to reply to it and also to comply with the request contained in it.

The following names of candidates for membership were brought forward by the Executive Committee:

John C. Long,	Lancaster, Penna.
Francis X. Dooley,	Washington, D. C.
James G. Nagle,	Baltimore, Md.

The subject of offering prizes the present year being referred to by Prof. Procter, it was, after some discussion, and in view of the fact that the prizes offered last year will not be matured until 1864, dismissed for the present.

The propriety of continuing the Committee on the Sale of Poisons being under debate, it was finally agreed, on motion, that the Committee be, for the present, discontinued.

The Business Committee brought up the matter of life-membership, alluded to in the President's Report, and stated that soon, under the Constitution, the funds of the Association would be very much curtailed by old members becoming exempt from the annual payment. After some discussion by Messrs. Parrish, Ellis, Taylor, Haviland, etc., the consideration of the subject was indefinitely postponed.

The following Resolution was offered by Edward Parrish, viz.:

That the Corresponding Secretary be directed to address the publishers of such Pharmaceutical and Chemical Journals in foreign countries as would be of value to our Committee on the Progress of Pharmacy, asking that the numbers of their Journals for the year be sent to the Chairman of that Committee, or other suitable address, in exchange for the Proceedings of this Association, and that he be authorized to draw on the Treasurer for the expenses of such exchange, and, if necessary, for the cost of subscription to the more desirable periodicals.

The Resolution was adopted.

Edward Parrish moved that a committee of three be appointed to take into consideration the present constitutional provision for the election of members, and also the propriety of issuing a new form of certificate of membership.

After some discussion the resolution was adopted.

On motion of Dr. Squibb, it was *Resolved*, That the Committees on Scientific Queries, on the Drug Market, and the Business Committee, be appointed by the Chair.

The subject of the place of meeting next year being under debate, Mr. Gordon suggested that it be held in Cincinnati, Ohio, but without coming to a decision, the meeting adjourned to 3 o'clock, P. M.

Wednesday afternoon—Third Session.

The meeting was called to order, about an hour after the time adjourned to, by the President.

The minutes of the last meeting were read, amended and adopted.

The discussion of the time and place of meeting next year being resumed, it was moved by Dr. Squibb, that when we adjourn it be to meet in Cincinnati, Ohio, on the afternoon of the third Wednesday in September, 1864, at 3 o'clock. After discussion the motion prevailed.

On motion the Chair appointed A. P. Sharp, of Baltimore, Charles A. Tufts, of Dover, N. H., and George J. Scattergood, a committee to examine and report on the specimens on exhibition.

The papers in answer to the Scientific Queries being called up:

No. 1. On Chenopodium, elicited no reply; Mr. Balmer had engaged himself in the investigation, but the paper was not sufficiently complete to offer to the Association.

No. 2. Edward Parrish, stated in reply to this question in regard to Capsicum, that at the period when it was in his opinion favorable to engage in its solution, he was prevented from accomplishing any results. It was continued.

No. 3. On the Production of Tartar in the Ohio Valley, Mr. Gordon, though absent when brought up, subsequently replied verbally, that owing to the opinion prevailing among wine-growers, that Tartar is advantageous to the wine while in contact with it, no cream of tartar is offered for sale from the wine region of Ohio, and that it is not likely that there will be any samples of it which will affect the trade.

No. 4. Relative to Aconite Root, was replied to by William Procter, Jr., and the paper was referred for publication.

No. 5. On Cantharidin, was continued to Professor Moore, he not being ready to reply.

No. 6. On Conium Seeds, was replied to by Mr. Close, of Brooklyn, N. Y., and referred for publication. The reading of this paper induced some interesting remarks from Dr. Squibb, Mr. Procter and others, showing the fugitive nature of Conia, and the care requisite in making its preparations.

No. 7. On the History of the Pennsylvania Coal Oil Production, etc., was not replied to, Mr. Weyman, of Pittsburg, not being in attendance at the meeting.

No. 8. On Creosote, not replied to by Mr. Bullock.

No. 9. Relative to the physiological action of Propylamin. Prof. R. P. Thomas, to whom this query and No. 11 was referred, in a letter to the President, remarks as follows:

"*Dear Sir*—Question 9 of the Proceedings of last year, referred to me, concerning the influence of Propylamin on uterine contraction, is in process of investigation. Cases seldom occur in which a trial could be made, and, therefore, more time is required. The question had better be continued.

Question 11. "What is the true botanical source of 'Southern Prickly Ash-bark?' cannot be investigated during the war. I suggest that it be dropped for the present. Very respectfully yours,

ROBERT P. THOMAS."

The question was continued to Dr. Thomas as requested.

No. 10. James T. Shinn stated that he had been unable to carry out the investigation of the vegetable astringents.

No. 11. Dropped from the list for the present, by request of Prof. Thomas.

No. 12. Prof. Maisch read a paper answering this question in relation to the solubility of Tartaric Acid, etc., which was accepted and referred for publication.

No. 13. This question not being replied to, was continued on the list, and referred to Edward Parrish.

No. 14. On a pharmaceutical still, was replied to by Prof. Procter, who illustrated his remarks by a tinned iron still, of four gallons capacity, of the form described in his paper. The latter was referred for publication.

A volunteer paper, by Thomas S. Wiegand, of Philadelphia, on the subject of the last query being now reported, and deemed appropriate to be read at this time, it was accordingly read by James T. Shinn, who illustrated it by a diagram. The paper was accepted and referred.

The whole subject of distillation being now before the Association, critical remarks were made by Dr. Squibb and others upon stills now in use. P. W. Bedford stated that the copper cans in which volatile oils are sold in commerce, may be converted read-

ily, either into kettles for boiling syrups, or into boilers for stills, adapting a tinned iron or copper head to them.

No. 15. In relation to specific gravity was not replied to by Dr. Pile, to whom it had been referred.

No. 16. Received no reply from Mr. Sackrider, of Cleveland.

No. 17. On the Buchu of Commerce, was replied to by P. W. Bedford, in a paper illustrated with specimens of the oils of the two ordinary commercial varieties. It was referred for publication.

No. 18 and 19. Received no reply from Messrs. Wright and Tilden.

No. 20. On the preservation of volatile oils, was replied to by Alfred B. Taylor, whose paper was referred for publication.

This paper gave rise to an interesting discussion on the action of light, and it was stated that canary-colored glass had proved very useful, practically, in excluding the actinic rays.

The Association now adjourned to 8 o'clock this evening.

Wednesday evening—Fourth Session.

The President called the meeting to order near the appointed time, and the minutes of the preceding session were read by the Secretary, and adopted.

The Chairman of the Executive Committee brought forward the names of James B. Heyl Hamilton, Bermuda, and Joseph C. O'Brien, of Baltimore, Md., for membership. A ballot was ordered and these gentlemen were unanimously elected.

On motion of Charles Ellis, it was granted that a new certificate of membership be given to Washington L. Laycock, in lieu of one destroyed by fire, which certificate shall be a copy of the one received by him originally, said copy to be marked duplicate.

The reading of Scientific Queries being now resumed, a reply to No. 21, on Sanguinaria, referred to Professor R. P. Thomas, was read by Prof. Procter. The paper was accepted, and referred to the Executive Committee for publication.

No. 22. On Fluid Extracts, was replied to, in an elaborate

essay, by Prof. Procter, which was read, accepted and referred for publication.

No. 23. On Mustard Seeds, was not replied to by Prof. Moore.

No. 24. Prof. F. F. Mayer, of New York, read a reply to this query, which was accepted and referred for publication.

Then, on motion, adjourned to meet at 9 o'clock to-morrow morning.

Thursday morning, Sept. 10th, 1863—Fifth Session.

The Association was called to order by the President, and the minutes read and adopted.

The name of Gustavus Dohme, of Baltimore, was brought forward for membership, by the Executive Committee. A ballot being ordered, it resulted in his unanimous election.

The President announced the following Standing Committees:

On the Drug Market.—John M. Maisch, of Philadelphia, Chairman; William S. Thompson, of Baltimore; Ferdinand F. Mayer, of New York; Samuel M. Colcord, of Boston; Charles Bullock, of Philadelphia.

On Scientific Queries for 1864.—Edward Parrish, of Philadelphia, Chairman; N. Hynson Jennings, of Baltimore; Richard H. Stabler, of Alexandria, Va.; James T. Shinn, of Philadelphia.

Business Committee.—Dr. E. R. Squibb, Chairman; Joseph Roberts, of Baltimore; W. J. M. Gordon, of Cincinnati.

On the present Constitutional Provision for the Election of Members, and on the propriety of issuing a New Certificate of Membership.—Edward Parrish, Chairman; John Meakim, of New York; James Balmer, of Baltimore.

The reading of Scientific Queries was resumed.

No. 25. On the Impure Commercial Oxides of Iron, was replied to by Ferris Bringhurst, of Wilmington, in a paper read by Edward Parrish, which was accepted and referred.

No. 26. Elicited no reply from Jonas Winter, of Baltimore.

No. 27. Do the Mineral Acids of American origin contain

appreciable amounts of Arsenic ? was replied to by Prof. Maisch. On motion, the paper was referred for publication.

No. 28. Referring to Marl as a source of Potash, was answered by a paper from George J. Scattergood, who being absent, the paper was read by the Secretary, accepted and referred.

No. 29. On Dialysis, was not replied to by Prof. Procter, who plead want of time to complete the necessary investigations required to give the paper an acceptable form. On motion, it was continued to him.

No. 30. Edward Parrish read an interesting paper in answer to this query, on the Internal Revenue Law, which was accepted and referred as usual.

No. 31. P. W. Bedford replied to this query verbally, that he had separated Sanguinarina from Chelidonium majus, but had no written paper to offer. Prof. Maisch believed that this alkaloid could not be obtained so economically as from Sanguinaria-root.

A volunteer paper on "Æsthetical Pharmacy," written by Frederick Stearns, of Detroit, was read by Prof. Procter. The paper was well received, and, on motion, was referred for publication.

A volunteer paper entitled "A Plea for the Hand-Maiden," was read by Edward Parrish. It was, on motion, accepted and referred for publication.

The Executive Committee brought forward the names of William H. Brown, of Baltimore, Alexander E. Brown, of Baltimore, J. Elwood Morrison, of Baltimore, and Charles E. Dohme, of Baltimore, for membership. When a ballot was ordered, and they were unanimously elected.

The Report of the Committee on Specimens was read, accepted, and directed to be published.

Dr. Squibb, of the Business Committee, presented the following preamble and resolutions,—viz.:

Whereas, It is desirable that during the interval between the decennial revisions of the Pharmacopœia there may be some repository in this Association for the information and knowledge resulting from prolonged practical use of the officinal formulas; and some members whose particular duty it may be to observe during this interval what additions or omissions might be usefully made in the next ensuing revision; therefore,

Resolved, That a permanent Committee on the Pharmacopœia, to con-

sist of three members, be appointed to keep a current commentary upon the Pharmacopœia, and a record of all useful criticisms and suggestions that may be made upon it while in practical use, with a direct view to its future revision; and that the Chairman of this Committee may, at his option, report an abstract of such information as he may gain at the annual meetings of the Association; and, finally, that members generally be requested to communicate to the Chairman any information or suggestions bearing upon the duties of the Committee.

The resolution was adopted, and the President appointed E. R. Squibb, W. Procter, Jr., and A. B. Taylor, to act on the Committee.

Edward Parrish offered the following resolutions:

Resolved, That the late edition of the U. S. Pharmacopœia, issued by the Committee of Revision and Publication appointed in Washington in 1860, meets the warm approval of this Association, and we commend it to the universal acceptance of the physicians and pharmaceutists of the United States, and will use our individual efforts to give it currency and to enforce its authority as the standard of practice throughout the country.

Resolved, That our thanks, and the thanks of the profession at large, are due to the Committee of Revision and Publication for their zeal and perseverance in the difficult and onerous labor devolving upon them, and for the production of a volume so universally approved and accepted.

They were, on motion, adopted.

Prof. Procter, Chairman of the Committee on Scientific Queries, stated that a large number of the queries before reported had been accepted by members present, and some referred to others not in attendance, but that many of the queries still remained unaccepted.

The Report was now again read, and finally adopted and referred to the Executive Committee, who are authorized to publish the names of members who may be found to accept questions yet open for investigation. The Report is as follows, viz:

The Committee appointed at the meeting in Philadelphia in 1862, to report a series of questions for investigation, offer the following as the results of their labor:—

1. Fermentation and cryptogamic vegetation viewed as destructive agents in connection with drugs and pharmaceutical preparations. What are the best means of avoiding the former, and arresting the growth of the latter without injury to the drugs and preparations?

Accepted by George J. Scattergood, of Phila.

2. Is there a practicable process whereby Aloin may be easily extracted

from commercial Aloes, so as to reduce the price of this principle in the market?

Accepted by P. W. Bedford, of New York.

3. Is there an eligible means by which all the medicinal matter of Cinchona may be held in a permanent solution without deposition of cinchotannates or cinchonic red?

Accepted by Alfred B. Taylor, of Phila.

4. What is the best process for extracting lard so as to fit it for the purposes of Pharmacy; and what the best means for preserving it for use during the summer and autumn?

Accepted by Henry W. Lincoln, of Boston.

5. What is the proportion of camphor present in the officinal Aqua Camphoræ?

Accepted by George F. H. Markoe, of Boston.

6. Does the aqueous extract prepared from Jalap that has been previously exhausted by alcohol possess any medicinal properties, or does the alcoholic extract of Jalap fully represent its virtues?

Accepted by Alfred B. Taylor, of Phila.

7. Does the volatile oil of Matico possess the power of stopping hæmorrhage, or does that property of the drug reside in some other ingredient, or in the physical structure of the leaf?

Accepted by James S. Higgins, of New York.

8. On the pharmaceutist as a merchant, and on commercial education in relation to the successful prosecution of the pharmaceutic art.

Accepted by Frederick Stearns, of Detroit.

9. Stramonium is abundant in the United States, and its alkaloid Daturia is alleged to be identical with Atropia in Belladonna. If this be true, in what relative proportions do these plants contain this principle, and why may not Stramonium be used as a source of Atropia?

Accepted by Prof. F. F. Mayer, of New York.

10. It is now known that liquid Storax is a product of Liquidambar Orientale, a tree closely resembling L. styraciflora of the United States. It is also well known that our indigenous Liquidambar yields in warm latitudes a balsamic exudation, analogous to storax in odor and to tolu in consistence; and contains cinnamic and benzoic acids. Query.—Will this tree yield a product identical, or nearly so, with commercial storax, if it is treated in the same manner?

Accepted by William Procter, Jr., of Philadelphia.

11. Is nicotina the active principle in carefully dried green tobacco leaves? Do the seeds of tobacco contain the same alkaloid? and if so, does the proportion of nicotina found in commercial (fermented) tobacco justify the belief of Liebig (Agricultural Chemistry, Amer. ed., 184), that nicotina is an artificial product?

Accepted by Prof. F. F. Mayer, of New York.

12. What is the best arrangement for spreading plasters of uniform sizes rapidly and well; and what is the best form and weight of spatula

for spreading plasters extemporaneously? together with observations on the dispensing of this form of preparations.

Accepted by Edward Parrish, of Phila.

13. Bitter Wine of Iron. What is the best formula for this preparation, in which citrate or tartrate of iron is presented along with one or more bitter tonics and aromatics, combining efficiency as a chalybeate tonic with elegance and agreeability in appearance and taste; with comments on similar preparations now in use?

Accepted by James T. Shinn, of Phila.

14. Glycerin—its mission (so to speak) in Pharmacy as a remedy, as an adjuvant, and as a solvent.

Accepted by W. J. M. Gordon, of Cincinnati.

15. It has been stated that the poisonous properties of Rhus toxicodendron reside in a volatile alkaloid. Is this true? Is this alkaloid dissipated when the leaves are dried? Can it be isolated in a state fit for medical use, or can the properties of the leaves be preserved in some form as a pharmaceutical preparation?

Accepted by John M. Maisch.

16. The leaves of Solidago odora possess the odor of anise. Are their medicinal properties due to a volatile oil, identical in composition with the oil of aniseed?

Accepted by Charles A. Heinitsh, of Lancaster, Pa.

17. The oil of Erigeron canadense is frequently employed in medicine for uterine hæmorrhage. Is its reputation deserved? Where is it chiefly produced? In what proportion does the herb yield the oil? and what are its physical and chemical properties?

Referred to Dr. R. P. Thomas, of Philadelphia.

18. The taste of Dittany (Cunila mariana) is very like that of horse-mint (Monarda punctata). Does the volatile oil of the former resemble that of the latter in physical and chemical properties?

Accepted by Charles A. Heinitsh.

19. Spatulas, stirring-rods, agitators, and mechanical stirrers used in pharmaceutical preparations: their material and quality, form and construction; with critical remarks.

Referred to Thomas S. Wiegand.

20. What are the best vessels in which to dispense ointments and cerates, combining fitness with elegance and economy; and what is the best plan for keeping this class of preparations in the dispensing shop, so as to retard their tendency to oxidation?

Accepted by William S. Thompson, of Baltimore.

21. Maruta cotula and Leucanthemum vulgare are extensively introduced into the United States; can their flowers, as has been repeatedly asserted, be made available for destroying insects, and may they be regarded as a substitute for the so-called "Persian Insect Powder," which is derived from the nearly allied genus Pyrethrum?

Accepted by George F. H. Markoe, of Boston.

22. Pumpkin seeds have acquired some reputation as a remedy in tænia. Does their curative power reside solely in the fixed oil?—if so, what is the best process for extracting it, and of dispensing it for internal use?

Accepted by Charles A. Tufts, of Dover, N. H.

23. An essay on gas-heating apparatus adapted to the various purposes of the apothecary, so as to enable him to conduct his processes in or near the shop; which shall combine efficiency with economy; illustrated by figures or specimens.

Accepted by P. W. Bedford, of New York

24. Valerianate of Ammonia. The crystalline salt made by the process of B. J. Crew is apt to have adhering valerianic acid, which renders it disagreeably odorous and moist. What is the best means of obtaining a dry, neutral salt?

Referred to Charles Bullock, of Phila.

25. What is the best formula for Elixir of Valerianate of Ammonia, which shall be nearly free from valerianic odor and elegantly aromatized?

26. Is there a reliable test for the active resin from Cannabis sativa of the East Indies, whereby the genuineness of Extract of Indian Hemp may be satisfactorily and easily ascertained by the pharmaceutist?

Accepted by Wm. Procter, Jr., of Phila.

27. What is the best kind of press for the pharmaceutical laboratory, on a moderate scale, combining great power with simplicity and easy manipulation? and can the principle of the hydraulic press be employed?

Accepted by R. H. Stabler, of Alexandria, Va.

28. Pure tannic acid being an odorless substance, is there an odorous substance in nutgalls that is found adhering to commercial tannic acid? or is the odor very commonly noticed in that substance due to the impure ether used in its preparation?

Accepted by Wm. Procter, Jr., of Phila.

29. Owing to the proverbial difficulty in keeping garlic from growing and drying up to its detriment, and to the fact that garlic may be prepared so as to keep like other drugs, by the destruction of the vitality of the bulblets, and their partial dessication,—it is queried: Can the latter process be advantageously applied to the commercial drug? and if so, how is it effected?

Accepted by A. P. Sharp, of Baltimore.

In conclusion, the Committee will remark that they have not brought forward any questions for prizes, but are prepared to do so should the Association direct it after the reading of this Report,

WILLIAM PROCTER, Jr.,
JOHN M. MAISCH,
J. FARIS MOORE,
CHARLES BULLOCK,
P. W. BEDFORD,
Committee.

The following resolutions were now presented by Edward Parrish, and, on motion, adopted:

Whereas, The mutual cultivation of science tends to break down sectional and national distinctions, and to unite all of kindred objects and pursuits in a common bond of friendship and good will; and whereas, we have learned with satisfaction of the Druggists and Chemists of Great Britain having been summoned near the same time as our present meeting, and as we believe for purposes similar to our own; therefore,

Resolved, That we view this movement on the part of our brethren of the mother country with feelings of satisfaction and encouragement, and invite their friendly co-operation and correspondence in advancing a knowledge of the science and art of Pharmacy, and in promoting the elevation of the profession to a position commensurate with the importance and dignity of its objects.

Resolved, That a copy of these Resolutions, signed by the proper officers of the Association, be transmitted to the President of said Conference of Druggists and Chemists of Great Britain by our Corresponding Secretary, who is also directed to solicit an exchange of their published Proceedings for those issued by this Association.

John Meakim presented the following resolution, which was adopted:

Resolved, That a vote of thanks be tendered by the Association to the retired President for his able administration of the duties devolving upon his office, and to the late Treasurer and Secretary for the very prompt and satisfactory performance of their respective duties.

The Chairman of the Business Committee presented the following resolutions, which were unanimously adopted:

Resolved, That the thanks of the Association are tendered to the Faculty of the University of Maryland for the use of their rooms and other accommodations so kindly furnished, and for the attention of their Janitor, during its sessions in Baltimore; and that the Secretary be directed to send a copy of this resolution to the Faculty through the Baltimore delegation.

Resolved, That the thanks of the Association are tendered to the pharmaceutists of Baltimore for their hospitality, kindness and numerous attentions to the necessities of the Association and the wants of the individual members.

Edward Parrish now made some remarks expressive of the kind feeling entertained by the members generally towards the Baltimore members, who have contributed so much towards the success and satisfaction of this meeting; when, on motion, the Association adjourned, to meet in Cincinnati on the third Wednesday of September, in the year 1864.

NOTE ON POISONING BY RHUS TOXICODENDRON.

By the Editor.

There are but few of our indigenous plants more widely disseminated in the neighborhood of Philadelphia than the species of Rhus commonly known as poison vine. The singular fact that many persons are wholly unsusceptible to its influence is quite true, whilst others are obnoxious to its effects in various degrees, from a temporary irritation to the most virulent inflammation and eruption, is equally true. Being one of the latter class, we have often suffered the inconvenience arising from it, and used most of the remedies recommended in the books, and by non-professional experience. When the alkaline solutions, as ammonia, liquor potassæ or even pearlash are applied, immediately after exposure to the *virus*, they rarely fail to counteract its effects except in the most susceptible, but unfortunately it often happens that the victim does not suspect the nature of the irritation until it proceeds to the vesicular condition, when as it is well known, the little blisters extend slowly to the surrounding parts, appearing as pimples, colorless at first, often attended with an annoying itching sensation. In a recent attack, where the extension of the poison over the surface had been controlled by diluted liquor potassæ (1 to 2 of water) it occurred to us to try the coagulating influence of Monsel's Solution (Liq. Ferri Subsulphatis, Pharm. 1860,) and with entire success and relief. Each vesicle was punctured with the point of a penknife, and a little splinter of wood dipped first in the solution and then inserted in the vesicle. The sensation is a little smarting, but not severe, and the peculiar action of the poison is at once arrested at the base of each vesicle, which soon dries up and the irritation ceases. The scab which forms under the influence of the subsulphate, is more consistent as well as persistent, than when it is not employed, and it has a dark red color, which gives to the part a speckled appearance. The relief thus afforded when the poison is on the wrist, or on the hands where the cuticle is thick and the vesicle deep-seated, is very gratifying.

GLEANINGS FROM THE FRENCH JOURNALS.

By the Editor.

Influence of Steam on Lead.—M. Lermer, in Dingler's *Polytech. Journ.*, has published an interesting article on the corroding influence of aqueous vapor on lead pipes. This effect is found to greatly increase in proportion to the purity of the lead. By alloying the lead with tin, the action of the vapor is much reduced, and at a minimum when the lead is but 37 per cent. of the mass.—*Jour. de Chim. Méd.*

Arsenic in Sulphuret of Antimony.—An ounce of the black sulphuret of antimony was given to twenty-four sheep, of which number ten died. On examining the sulphuret by Wackenroder's process, M. Reynolds discovered 1·33 per cent. of sulphuret of arsenic.—*Jour. de Chim. Méd.*

Iodide of Iron and Quinia, crystallised.—M. Smedt believes that he has obtained this salt perfectly definite. He prepares it as follows: Take of Sulphuret of Barium a sufficient quantity. Make a concentrated solution in water, precipitate it by tincture of iodine, filter to separate the sulphur, and add 30 parts of Sulphate of Quinia dissolved in concentrated alcohol.

Sulphate of baryta precipitates and iodide of quinia remains dissolved in the alcohol and communicates to it a deep yellow color; thrown on a filter, the sulphate of baryta is washed with alcohol, the liquors, united and evaporated, yield the iodide of a beautiful orange yellow-color; lastly, 12 parts of iodine are transformed into a concentrated solution of iodide of iron, to which the alcoholic solution of iodide of quinia is added, and heated on a water bath. As the alcohol evaporates, the liquor assumes a beautiful green-color, and a small quantity of dark green resinous matter separates. Towards the end of the evaporation a little alcohol is again added, filtered, and left to crystallize; the crystals are expressed strongly and dried.

The iodide of iron and quinia obtained by this means is in long needles of a beautiful yellow-color, completely soluble in boiling water, and not precipitating on cooling. This salt dissolves in cold alcohol and ether, is without odor, and has a bitter and ferruginous taste. In fact, it presents all the characters of a

perfectly definite compound, but its composition has not been verified by analysis.—*Jour. de Chim. Méd.*, Sept. 1863.

Falsification of Essence of Mace.—M. de Letter has noticed a fraud which consists in substituting an alcoholic tincture of nutmegs for the essential oil. This product has a golden yellow color, and is very fluid, two properties which are not characteristic of the essential oil of mace. Besides, this pretended essence mixes with water, rendering it slightly lactescent like tincture of nutmegs, which in color resembles the fraudulent essence. A few drops of the latter tested with bichromate of potassa and sulphuric acid developes instantly the green coloration due to alcohol.—*Bul. Soc. de Pharm. de Brux.* et *Jour. de Chim. Méd.*

Syrup of Balsam Copaiba.—M. Edward DuMay (*Jour. de Chim. Méd. Aout*, 1863) gives the following receipt for this syrup:

Take of Balsam of Copaiba, of Cayenne	167	grammes.
Calcined Magnesia,	9	"
Simple Syrup,	320	"
Yolk of Egg, fresh,	No. 4	

Triturate the yolk of eggs with the magnesia, and add afterwards and mix intimately the copaiba, and finally the syrup. This preparation keeps well.

Casein Cement.—Dr. Wagner recommends the employment of a cold saturated solution of borax or of silicate of soda, to dissolve casein in preference to the alkaline carbonate indicated by Braconnot. The solution of casein by borax is a clear liquid, of viscid consistence, more adhesive than gum, and able to replace in many cases strong glue. Stuffs of linen and cotton impregnated with this solution can be treated with tannic acid or acetate of alumina and rendered impermeable. Marsden, in his *History of Sumatra*, has shown that the chief cement employed in that country is made from curdled buffalo's milk, and called *prackee*. To prepare it, the milk is abandoned to itself until the cream becomes butter, which is removed by a spoon and washed with water for use. The residual liquid of the milk is sour and thick, and it is this that they call *prackee*. They press it strongly so as to get it into the form of cakes, which are dried

and become excessively hard. When it is to be used, a certain quantity is scraped off, mixed with quick lime in powder and moistened with milk. The cement thus obtained is extremely solid, and resists perfectly hot and humid climates a great deal better than glue; it is specially good for cementing porcelain. —*The Technologist. Journ. de Chim Med.*

The following recipes for mineral salts have been translated from the Report of MM. Bussy, Grandeau and Baudrimont, to the Commission revising the French Codex.

Sulphate of Protoxide of Manganese.

Take of Black Oxide of Manganese (natural), 1 part.
Commercial Proto-sulphate of Iron, 1 "

By contusion and trituration make an intimate mixture and heat in an earthen crucible to ordinary redness. The mass being cooled, pulverize it and exhaust it with boiling water and evaporate to dryness. Redissolve the residue in hot water, filter and evaporate and crystallize.

This salt is very soluble in water, and should not be colored blue by yellow prussiate, nor black by sulphuretted hydrogen, after adding acetate of soda.

Chlorate of Soda.

Take of Crystallized tartaric acid, 150 parts.
Carbonate of soda, crystallized, 143 "
Chlorate of Potassa, 121 "

Dissolve the tartaric acid and carbonate of soda separately, in convenient quantities of hot water, and add little by little the solution of carbonate, to that of the acid in a capsule sufficiently large to prevent the liquid from loss by effervescence. When this last has ceased, agitation causes the deposition of the bitartrate of soda.

On the other hand, dissolve the chlorate of potassa, in twice its weight of boiling water, and mix this solution with the magma of the bitartrate of soda resting in the capsule. Carry the whole to ebullition, and add enough of water to dissolve and allow it to cool completely. Filter the liquor to separate the precipitate of cream of tartar which forms. Evaporate the filtrate, nearly to dryness, and stir it to avoid loss by decom-

position. When cold lixiviate the granular salt with four or five times its weight of cold water, agitating to facilitate solution, and when there only remains a granular crystalline residue which refuses to dissolve, filter and evaporate to one-fourth, and set aside to crystallize.

Thus made, this salt ought not to blacken when heated on platina foil, and should but slightly trouble a solution of nitrate of silver. It is soluble in three times its weight of cold water. 122 parts of chlorate of potassa yield 106 parts of chlorate of soda.

Hypermanganate of Potassa.—$KO, Mn^2 O^7$.

Take of Binoxide of manganese finely pulverized and washed, 10 parts,
Caustic potassa, well fused, 12 "

Put them in a cast iron basin, add a little water, sufficient to render the mixture pasty, dry rapidly, stirring constantly with a strong iron spatula whilst heating over the fire, to remove all humidity; introduce the grumous mass obtained, into a tubulated earthen retort, and lute in its tubulure a large green glass tube, descending nearly to the bottom of the retort. Place the retort in the upper part of a laboratory furnace, adapt to its neck a curved tube, which should dip 2 centimetres into mercury. Pass through the tube, dipping into the retort, a current of oxygen deprived of carbonic acid gas, at the moment when the retort has attained a dull, red heat. The action is terminated when the oxygen is disengaged freely through the tube dipping in the mercury, or when it ceases to disengage watery vapor.

The retort is now cooled, emptied, and the contents lixiviated with a sufficient quantity of warm water. Pass into the liquor thus obtained, a current of washed carbonic acid, until the solution has taken the characteristic violet tint of the hypermanganate. Allow it to repose 24 hours, decant and rapidly evaporate it without ebullition to the proper degree, that, by cooling, it will make a good crystallization of hypermanganate. The mother waters are evaporated whilst they yield prismatic crystals by evaporation. They are carefully dried, avoiding the contact of organic matter.

100 parts of binoxide, yield 35 to 40 parts of permanganate in the first crystallization.

This salt is in beautiful prismatic needles, of a bronzed and violet black. It should be entirely soluble in water. Its solution of a magnificent violet becomes green by alkalies.

On oxycinchonia, an alkaloid isomeric with quinia. By M. Strecker.—The interesting relations which exist between quinia and cinchonia, as much in regard to composition as to origin and properties, have suggested to M. Strecker the idea of seeking to fix on cinchonia the oxygen necessary to make its composition that of quinia. He has succeeded; but the product is not quinia, only an isomere of that base.

The transformation has been effected by the aid of a well known process, which consists in replacing one eq. H. by Cl. Br. or I., and replacing afterwards this metalloid by HO, by means of potassa or hydrated oxide of silver.

Monobrominated cinchonia of Laurent, is boiled with water and an alcoholic solution of potassa. After a prolonged ebullition, a current of CO^2 is passed into it to neutralize the alkali. After evaporation to dryness, it is washed with water, and the residue treated with boiling alcohol, which deposits, by evaporation, colorless crystalline plates of the composition $C^{40}H^{24}N^2O^4$.

This is the formula for quinia, but it has not the properties of that base. The solutions are not fluorescent, like those of quinia, nor do they yield dalleochin by chlorine and ammonia. Its salts are with difficulty crystallizable; the most crystalliza ble being the neutral sulphate and oxalate.

The author has named the new base, *Oxycinchonia.—Annal. der Chem. & Jour. de Pharm.* Sept. 1863.

On a new kind of Cubebs.—Within a brief period, Cubebs from the Dutch East Indies have entered commerce; they are attributable to an analogous species, and are offered at a much lower price than ordinary cubebs. But they differ essentially from true cubebs, and must be considered as false and improper for medical employment. M. Pas, as well as M. Grœnewegan, have examined them. The size of this cubeb surpasses considerably

that of black pepper, and is nearer that of allspice. Its color is ash-grey, approaching brownish-black, and the wrinkles on the surface are less deep and more regular than those of true cubebs, the petioles are a little flattened. The odor is less agreeable, and the taste less burning, less pungent and more like mace.

Thrown into water, the new cubeb absorbs it more rapidly, and precipitates consequently much sooner than ordinary cubebs. It colors the water deep brown, whilst true cubebs gives it but a light yellow, after several day's contact. Maceration in water softens both fruit and seed, which is not the case with cubebs.

True cubebs are difficult to powder; the false drug is easily reduced to powder. The true powder is deep brown, of an aromatic odor, whilst its congener is greyish-red with a terebinthinate odor. The volatile oil of this berry, possesses a sharp odor resembling a mixture of flower of nutmegs, lemons and oil of turpentine, and is colorless, whilst that of cubebs is thicker and greenish colored.

100 parts of true cubebs yield 21 of a greenish balsamic extract to ether, whilst in the same manner treated, the false drug gave but 10 parts of a brownish balsamic extract. M. Pas thinks this drug is the ripe fruit of Piper Cubeba, whilst M. Grœnewegan thinks they are the product of *Piper anisatum*. *Joun. de Chim Méd. et Jour. de Ph. d Anvers.*

Tannin, its employment as a substitute for Cinchona.—Under this title, Dr. Leriche has published a memoir which received a silver medal from the Society of Medical Sciences of Brussels.

The author arrives at the following conclusions:

1. Pure tannic acid properly administered, is an excellent anti-periodic;

2. It possesses real efficacy in the treatment of all intermittent fevers of a simple quotidian type;

3. The facility of its extraction, its low price, its innocuousness, render it preferable to sulphate of quinine, or at least to the other derivatives of Cinchona.

4. It consequently unitesall the qualities of a good succedaneum, and constitutes, at the present time, the best of indigenous febrifuges.—*Jour. de Chimie Médicale, Oct.*, 1863.

REPORT ON THE BARK AND LEAVES OF CHINCHONA SUCCIRUBRA GROWN IN INDIA.

By J. E. Howard, Esq.

To the Under-Secretary of State for India.

Sir,—I have the pleasure of reporting that the specimens of Chinchona bark and wood, together with dried leaves and decoction made from the same, reached me in good order on the 23d of May last, and that I have since submitted them to careful examination.

The appearance of the bark indicates that it has been gathered and dried under favorable circumstances. It is full of sap, which, in some cases, exudes a little at the cut ends, and forms what is called a resinous ring or circle. The specific gravity is considerable, and the thickness, especially of the fifteen months old bark, is remarkable for the time of growth, being about one-tenth of an inch in some of the quills, which curl much in upon themselves in drying. The external surface is warty, and the color more of a tea-green than is usual in the bark as it is imported from South America; but, as it is not cut there at so early a stage of growth, it is difficult to form an accurate comparison in this respect. The taste is that of "red bark," being compounded of the bitter of the alkaloids and the more nauseous taste of kinovic acid. The powder resembles that of good Peruvian bark.

In order to make the best analysis of the small quantity of bark at my command, I commenced with 500 grains of that of the second year's growth, and was able to obtain therefrom a first and second crystallization of white sulphate of quinine. By thus specifying the whiteness, I mean to imply that the bark had not the commercial disadvantage which frequently attends the "red bark" at a more mature stage of growth, resulting from the fact that the coloring matter has in these last become so much implicated with the alkaloids as to make the task of purification a difficult one. The crystallizations I obtained were mixed with some sulphate of chinchonidine, which is commercially (but not medicinally) a disadvantage, and

one which always attends the products of "red bark." I also obtained chinchonine and other usual products of the process as from South American bark, viz. kinovic acid, kinate of lime, gum, chinchona red, etc. The product of alkaloid in a rough state was estimated at 4·30 per cent. A second trial of the same quantity enabled me to decide more accurately the per centage product in *purified* alkaloids. I found the total contents 3·30 to 3·40 per cent., and of this (soluble in ether) Quinine and some Chinchonidine, 2·40 per cent. leaving ·60 per cent. of Chinchonine, which crystallized freely, and also ·30 or ·40 loss, chiefly in water of the hydrated alkaloids. This result must be considered extremely favorable.

I have noticed the product of some fine quills of South American red bark as 3·60 per cent.,* the larger bark of the same parcel producing 3·91 of alkaloid. Dr. Riegel obtained from one ounce red bark, the best quality, 4·16 per cent. by Rabourdin's process, or 3·90 by that of Buchner. Of this 2·65 per cent., soluble in ether, was reckoned as Quinine, and the rest was set down as Chinchonine.† I have obtained a much higher percentage of alkaloid from large and peculiarly fine "red bark," but I see no reason to doubt that even this higher percentage would be attained in the East Indies, if time were allowed for the growth.

The exact period at which it would be advisable to cut the bark must be ascertained by experiment; but I think this should take place as soon as the bark attains to a thickness which would repay the cultivation. There would be positive disadvantage in allowing the bark to attain such an age as is indicated by many of the specimens from South America, if the object to be attained is the extraction of the alkaloids; since there is a continual process of deterioration‡ of these after a certain period of the history of the bark, which is connected with the oxidation of the red coloring matter,

* 'Illustrations of Nueva Quinologia,' under head *C. succirubra*, p. 15.

† 'Pharm. Central-blatt,' for July, 1852.

‡ Described in my 'Illustrations of Nueva Quinologia,' under head *C. succirubra*, p. 14.

and the production, in very old trees, of those fine descriptions of bright red bark which command indeed a high price in the market (as much at the present time as eight shillings per pound,) but which would not, in many cases, be more valuable for the production of Quinine than bark of one year's growth.

I next examined the younger bark of one year's growth, taking care to select the most mature portion, and found that it yielded 2·59 of alkaloid, of which 2·55 (soluble in ether) appeared to be Quinine and Chinchonidine, and in part crystallized into tolerably white sulphate, which showed perhaps a rather larger proportion of Chinchonidine than in the older bark. On the other hand, the proportion of Chinchonine seemed notably less, viz. only 0·04 per cent.; but it is possible that the separation was not exactly effected between the Chinchonine and Chinchonidine, which is not easily accomplished by ether in such small portions.

The above result induced me to pay further attention to the leaves, concerning which the absence of any carmine sublimate by heat led me at first to an unfavorable conclusion. The decoctions and infusions made by Mr. M'Ivor, though in perfectly good condition, showed that the contents changed most rapidly under the influence of the oxygen of the atmosphere as soon as ammonia was added to the, at first, decidedly acid liquor. Fortunately, a good supply of several ounces of dried leaves had been sent over, and from these I succeeded in obtaining Quinine, though in very small quantity, but presenting its usual characteristics, dissolving in acids and precipitated by alkalies as a whitish hydrate, soluble in ether, and left by this evaporation as a resinous-looking body, having the usual bitter taste, also crystallizing not only as a sulphate, but as an oxalate of Quinine (the latter being the more critical test); but nevertheless presenting a characteristic implication with resinous or extractive matter, such as is usually met with in the very smallest quills or *canutillos* of South American bark, in analysing which it is frequently difficult to purify the Quinine from this adhesion. I obtained first from these leaves to the extent of 0·11 of alkaloid, of which part was soluble in ether,

the remainder in spirits of wine, and afterwards 0·19 of precipitate still more combined with astringent matter. From these data, it seems to follow that the leaves will not supply a material for the extraction of Quinine, but that they will, nevertheless, be very useful when used fresh or recently prepared decoction or infusion for the cure of the fevers of the country. To this end, the abundance of kinovic acid they contain, equal (weighed in the rough state) to 4·20 per cent., may also conduce.

I have not much to remark to the No. 3 (bark renewed over spaces previously cut,) as the quantity sent was too small for much chemical examination, but I obtained abundantly by heat the crimson sublimate which marks the presence of alkaloids, and the promise from the external characteristics was good. The No. 4 (bark covered up with moss for some months) seems to me a successful experiment of Mr. M'Ivor's, especially since I notice very abundantly in this bark the crystals of kinovate of Quinine, which I have described* as I found them in the "red bark" of South America, and now find again, quite as plentifully, in the older bark sent from India. I may add that generally speaking, the structure of the barks, as shown by the microscope, makes it evident that the plants had grown vigorously and under circumstances favorable to their full development.

I reserve any opinion as to the best method of drying the bark, to which Mr. M'Ivor alludes, till I have had the opportunity of examining further specimens.

I have the honor to be, Sir, your obedient servant,

June, 1863. JOHN ELIOT HOWARD.

Lond. Pharm. Journ., Aug., 1863.

QUININE, CHINCHONIDINE, AND CHINCHONINE, IN THE LEAVES OF CHINCHONA SUCCIRUBRA.

A few remarks of a technically scientific nature on some points which struck my attention in making the investigation detailed in my official report on the red bark grown in South

* 'Illustrations of Nueva Quinologia,' Mic. Obs., p. 7.

India, may not be unacceptable. The discovery of Quinine, Chinchonidine, and Chinchonine, in the leaves of the *Chinchona*, seems to confirm the views which I have expressed as to the production of the alkaloids by a reaction taking place between the mother-substance found in the heart-wood and carried up into the leaves by the circulation of the sap, and the ammonia which, according to the observations of De Vry, is present in in every part of the plant. This mother-substance, forming a yellow solution in ether, separates in a flocculent mass by the addition of quinine, and the semicrystallization thus induced formed on recrystallization the crystals which I have described and figured as similar to those found *in situ* in the bark itself. The Chinchona-red appears to be formed at the same time, and colors the flocculent mass reddish, or rather pink. I find in the leaves abundance of kinovic acid, which, separated from adherent chlorophyll, becomes perfectly white and similar to that obtained from the bark; they also yield much wax and kinate of lime, together with gum. In order to check or confirm the trial of the leaves, I also examined with similar results the hollow square stalks (received, with other parts of the tree, from Ecuador) just below the insertions of the leaves. This gave a similar but rather less minute quantity of quinine, and also of an alkaloid not soluble in ether. I conclude that the process of the formation of the quinine goes forward still in the bark, though begun in the leaves, and continues to increase with the increasing maturity of the bark, undergoing afterwards the deterioration above spoken of. If such be at all the process, the alkaloids must be found in the sap itself; and if the quinine be formed in the leaves, in which there are certainly no liber-fibres, it seems to me to dispose of the hypothesis that these latter are in some way *essential* to the formation of the alkaloids. The above discovery also coincides with the presence of quinine (as I have shown) very eminently in the cellular tissue of the outer bark, which is evidently, in the barks under consideration, gorged to repletion with sap. Reserving any remarks on the microscopic peculiarities in these East In-

dian barks for some further occasion, I remain, yours, etc.—JOHN ELIOT HOWARD. *Lond. Pharm. Journ. Aug.* 1863, *from the Journal of Botany.*

A CRYSTALLINE PRINCIPLE DERIVED FROM THE EUONYMUS EUROPÆUS.

BY M. KUBEL.

This principle is found in the cambium of the *Euonymus europæus.* The larger branches are selected in the spring; the green external bark is removed; the under layer is then scraped off with a knife until the wood is reached, and the scrapings macerated in strong alcohol. This tincture is allowed to stand half an hour, then expressed, and left to spontaneous evaporation. Crystals are deposited, which greatly resemble those of mannite. A second crystallization from alcohol and treatment with animal charcoal, yield them in a state of purity. The substance thus obtained is in small crystals consisting of microscopic needles, derived from an oblique rhombic prism. Insoluble in absolute alcohol and in ether, they are dissolved by cold, and are very soluble in hot water. The solution has no action on litmus paper, and does not appear to alter a ray of polarized light. The crystals contain no water of crystallization, and do not lose weight even at 110° Cent.; at 182° Cent. they fuse, and again solidify on cooling. The substance burns with an odor of caramel when ignited on platinum foil; it does not reduce tartrate of copper, even after ebullition with sulphuric acid, but it reduces the salts of silver.

All these characters, except the crystalline form and the fusing-point, accord with those of mannite. The centesimal composition is also the same, $C_{12}H_{14}O_{12}$. From the difference in crystalline form and fusing-point of the two substances, the author does not admit their identity, but gives the name of "euonymite" to the new product.—*Lon. Pharm. Jour. Feb.* 1, 1863, from *Journal Prakt. Chem.*

ON THE ESTIMATION OF TANNIC ACID.

By Dr. D. W. Gerland.

The importance of a reliable and easy method for the estimation of tannic acid as a means of determining the value of tanning materials has been duly noticed, and a great number of processes described for that purpose. An examination of these methods, induced by numerous samples sent to me for analysis, has convinced me that those recommended fail in answering the desired end, as some yield too high a percentage of tannic acid by the accompanying gallic acid being estimated as tannic acid, some giving altogether incorrect results, whilst others are too complicated to be of service to any but the skilled chemist.

After a long experience, I have found that the estimation of tannic acid is accomplished with great accuracy and speed as tannate of antimony precipitated by a standard solution of tartar of antimony, if the operation is conducted in the following manner:

The solution of tartar emetic I prefer of such strength that 1 CC will precipitate 0·005 grammes tannic acid.

1 equivalent tartar emetic, dried at 100°

$$(—KO,SbO_3,\ C_8H_4O_{10} = 332{\cdot}2$$

requires 3 equivalents tannic acid

$$3(C_{18}H_8O_{12}) \quad . \quad = 636$$

to form 1 equivalent tannate of antimony,

$$SbO_3,\ 3(C_{18}H_8O_{12} \quad . \quad = 789.$$

Accordingly, 0·002611 grammes tartar emetic will precipitate 0·005 grammes tannic acid of galls, and therefore 2·611 grammes tartar emetic dried at 100° C. are dissolved in 1000 CC water, each CC of which solution is then equal to 0.005 grammes tannic acid. This liquor, added to a dilute solution of tannic acid, produces no change, but if a solution of chloride of ammonium is mixed with the latter, the tannate of antimony appears as a thick, curdy precipitate, which, after stirring, settles readily, leaving the supernatant solution perfectly clear, so that it is easy to perceive whether another drop of the antimonial liquor

will again cause a precipitate. Its voluminous and opaque character makes it very perceptible to the last, so that I found less difficulty in observing the end of this reaction than with the usual estimation of sulphuric acid by a standard solution of chloride of barium. If as much and no more of the tartar solution had been added as will cause a precipitate in the sample, the filtrate of the same will be found free from both antimony and tannic acid, and the precipitate after filtering, washing, and drying, at 100°C., consists of pure tannate of antimony of the formula—

$$SbO_3, 3(C_{18}H^8O_{12})$$

and contains all the tannic acid of the original liquor. Any gallic acid that might have been present in the tannic acid is not precipitated under these circumstances, and consequently does not interfere with the estimation of tannic acid; for the ammonia salt, whilst it renders the tannate of antimony insoluble, keeps the gallic acid in solution. Nor do the coloring matter and other impurities extracted by water from the tanning materials affect this process. It is, however, to be observed that the reaction of the liquor is neutral or slightly acid. The number of CC of the standard solution used will therefore, when multiplied by 0.005, give the exact amount of tannic acid in the sample, or the percentage, if 0·5 grammes were employed.

To illustrate the exactness of the method, I add a few of my experiments:

No. 1. 0·5 gramme commercial tannic acid of galls was dissolved in 100 CC of water, of which 30 CC were mixed with a solution of chloride of ammonium, and diluted with water to about 200 CC. After having added 29·1 CC of the standard solution, the filtered liquor was free from tannic acid, showed a slight reaction of antimony, and contained gallic acid. The precipitate, thrown on a weighed filter, and after washing with water dried in the water-bath, weighed 0·1791, and was found to contain 18·01 per cent. oxide of antimony. The formula—

$$SbO^3, 3(C^{=}_{18}H^8O_{12}),$$

requires 18·13 per cent. The sample therefore contained, according to the quantity of standard solution used,—

97·0 per cent. tannic acid,

calculated from the amount of precipitated tannate of antimony—

96·24 per cent. tannic acid.

No. 2. 10 grains of oak bark, finely divided, were extracted with hot water, the filtered solution diluted to 500 CC, of which 50 CC were, after further dilution with water and addition of chloride of ammonium, tested in the same manner. The amount of standard solution of antimony used for precipitation was 12·51 CC, the weight of the washed and dried precipitate was 0·1563 grammes, containing, according to calculation, 0·1257 grammes tannic acid. The percentage of oxide of antimony in the precipitate was found equal to 18·07 per cent.

No. 3. Dried valonia extract was treated in the same manner. 0·5 grammes required 38·8 CC of the antimony solution. The percentage of tannic acid calculated from the weight of the precipitated tannate of antimony was 38·92.—*Chem. News, Aug.* 1, 1863.

Chemical Laboratory, Macclesfield, July, 1863.

ON THE TRANSFORMATION OF ARSENIC INTO A SOLID HYDRIDE UNDER THE INFLUENCE OF NITRIC ACID.

By Dr. Blondlot.

It is well known that when more or less diluted acids disengage the hydrogen of water in the presence of zinc or iron, the nascent gas, if in contact with a soluble compound of arsenic, forms with the latter a gaseous hydride having the formula AsH_3. But to this general fact there is one exception, which I desire to call attention, inasmuch as it may have great importance in toxicological researches. Nitric acid and its derivatives under the conditions named, only produce a solid hydride, having the formula As_2H, which is precipitated upon the zinc in the form of brown flocculi.

This characteristic reaction is evidently due to the formation of a certain quantity of ammonia, and is produced, even when

the nitric acid is mixed in very minute proportions with other acids, so that we may avail ourselves of the reaction to detect the least trace of a nitrous compound in sulphuric, hydrochloric, or other acids. When once formed, however, the solid hydride of arsenic is insoluble in the cold in sulphuric and hydrochloric acid, whether concentrated or diluted, and therefore gives no trace of the gaseous hydride in Marsh's apparatus. Of this fact I have repeatedly assured myself by placing in the apparatus strips of zinc previously coated with the hydride in question.

For the production of this solid hydride to take place, however, the author states that the absence of all other metals from the solution is necessary. And not only this: the presence in the liquid of certain organic matters, such as sugar, gum, gelatine, alcohol, ether, even in small proportion, prevents the formation of the hydride. Nevertheless, he adds, the property possessed by arsenic of depositing itself on zinc, as a hydride in the presence of nitrous compounds, affords us the means, if not of isolating, at least of characterising it. If arseniuretted hydrogen is passed into nitrate of silver, as in Lassaigne's test, and the excess of silver is precipitated by chloride of sodium, the clear liquor obtained by filtration, acidulated with a few drops of nitric acid, will quickly deposit the hydride on a strip of pure zinc. The author affirms that this reaction is second to none in sensibility.

Hitherto, sulphuric and hydrochloric acids have been considered sufficiently pure for toxicological researches when proved to be free from arsenic; but the author's results show that it is equally important to have these acids free from nitrous compounds. Another source of error exists when animal matters suspected to contain arsenic are carbonised by a mixture of sulphuric and nitric acids. If the whole of the nitric acid is not got rid of, there is the danger that when the liquid obtained is tested by Marsh's method the whole of the arsenic may pass into the solid hydride and remain undetected.—*Chem. News, Aug* 1, 1863. *Condensed from Annales de Chimie et de Physique*, t. lxviii, p. 186.

ON FERMENTATION AS A CAUSE OF VARIOUS DISEASES.

By M. Polli.

M. Polli, of Milan, has recently published two very interesting memoirs on fermentation as a cause of various diseases, from which we extract some of the more important facts.

Chemists who have, of late years, investigated with the greatest success the phenomena of fermentation, have observed that this mode of reaction amongst organic principles has a much greater importance than was suspected. It is, in fact, to fermentation that the spontaneous decomposition of animal and vegetable tissues is due, such as gangrene, dry-rot, eremacausis, etc., and the whole series of successive transformations that organic substances undergo until they are converted into water, carbonic acid, ammonia and mineral matters. It is by fermentation that fatty bodies give glycerine; that salicine furnishes glucose; that myronate of potash is converted into essential oil of mustard; that neutral substances, such as urea and allantoin, form ammonia; that amygdaline produces the poisonous substances, oil of bitter almonds and hydrocyanic acid.

Ferments act by contact or by catalysis. Sometimes they are living creatures, sometimes very active substances which are not organized. Diastase, emulsine, and pepsine perform the part of ferments. They may cause organic substances to double, become hydrated, or isomeric.

According to M. Polli, there exists a great analogy between the processes of fermentation and many organic metamorphoses which occur in some diseases. An albuminous matter which in a particular state of alteration acts as a ferment, and particular substances which proceed from its action, this is the basis of the humoral theory.*

But analogy is not sufficient of itself; it has been shown by carefully conducted experiments that the blood in disease undergoes alterations and variations in its composition, and that arti-

* According to M. Pasteur, ferment is not albuminous matter altered by oxygen, but an organized being, the germ of which is brought by the air. The presence of albuminous matter is an indispensable condition of all fermentations, because such substances are necessary to the production of the ferment.

ficial disease may be produced bearing a strong resemblance to natural disease, by injecting into the blood-vessels substances which act as ferments. Multiple abscesses, induced by the injection of pus into the veins of dogs; septic affections caused by injecting purulent putrid matters into the veins of animals; diseases presenting all the characteristics of typhoid fever, and caused by the injection of putrefied blood into the circulating current; finally, contagious diseases, such as glanders, which is produced by the injection of glanderous humours, are facts which prove that a general affection may be induced by the simple introduction into the blood of a substance capable of acting as a ferment. The diseases which may be called catalytic, in which the morbific matter produces metamorphoses by contact with the alterable principles of the blood, are the primary cause of all the symptoms presented by the animal economy. In short, it is imposible to deny that fermentation may be produced in the blood.

But, admitting that the starting-point of many diseases is the action of a specific ferment in the blood, is it possible to prevent its effects, to render it inactive in the living organism, as we may do apart from the body, by many chemical means? This is the great point which gives interest to this pathological question.

M. Polli believes that he has proved, by a series of facts and conclusive experiments, that it is possible to neutralize morbific ferments in the blood of animals by chemical substances which do not act in a manner incompatible with life; and it is by these substances that we must hope to treat successfully those diseases, of which fermentation is the primary cause.

It is well known that sulphurous acid gas prevents alcoholic and acetic fermentation, and also the fermentation of animal substances and organic matters in general. Thus it arrests, if it be already begun, the fermentation produced by saliva and diastase in contact with starch, the fermentation which myrosine induces in the paste of black mustard flour, that which is produced by emulsine on the amygdaline of bitter almonds, etc.

M. Polli has proved that alkaline or earthy sulphites possess the same antiseptic and decolorizing properties. This is

a very important fact, since it admits of the application of sulphurous acid in therapeutics. He thinks also that he has ascertained that the action of sulphurous acids and of sulphites on coloring matters, as well as on ferments, is neither a deoxygenation, a combination, nor a destruction, but simply a molecular modification.

This mode of action of sulphurous acid and sulphites explains the valuable property which these chemical compounds possess of preventing or energetically arresting the action of morbific ferments artificially introduced into the blood of animals, without altering its composition in such a manner as to be incompatible with life.

From a great number of experiments made upon dogs and alluded to in his memoirs, M. Polli has determined the safe and efficacious dose of sulphites for internal administration, the changes which they undergo in the organization, and their curative action in the affections produced by the injection of putrid or contagious matters into the blood.

The following are some of his experiments, selected from those of the last-mentioned series:

1. Ten grammes of sulphite of soda were given to a dog during a period of five days, then one gramme of pus was injected into the femoral vein. The animal became dull, and refused the food which it was offered, but the next day its spirits returned and it ate willingly. Two days after, the same experiment was repeated and was followed by the same results. At the end of a few days the animal was perfectly cured.

2. One gramme of pus was injected in two portions into the veins of a dog, of a more robust nature than that operated upon in the preceding experiment. The animal became spiritless, but the next day took some food; the following day it was very low, it breathed with difficulty, its wounds were sanious, its left leg and foot swollen, and it died ten days afterwards.

3. An equal quantity of putrid blood was injected into the veins of three dogs; one died five hours after the infection, another after five days of illness, and the third, to which some sulphite of soda had been administered, after having experienced some trifling symptoms of illness, rapidly recovered.

4. Numerous other experiments made with putrid blood and morbific mucus proved that the animals died with all the symptoms of a general infection, whenever sulphite of soda was not administered, and that, on the contrary, they speedily recovered, under its influence.*

If these facts should be confirmed by other experiments, M. Polli will have rendered an inestimable service to therapeutics, and will have thrown some light on the yet obscure cause of numerous diseases.—*Pharm. Journ. and Trans., Lond., April*, 1863, *from Journal de Pharmacie et de Chimie.*

SUBSTITUTES FOR WAX.

By Barnard S. Proctor.

In the January number of the Chemist and Druggist for the current year, I published a short paper drawing attention to the adulteration of white wax: this present paper follows as a natural sequel to the former, and is designed to indicate the relative merits of various substances which may be considered suitable for replacing wax in one or other of its uses. With regard to the fitness or otherwise of any of these substitutes to take the place of wax for medicinal purposes, I shall say nothing, such a substitution being both unnecessary and illegitimate. It is also unnecessary to say anything with regard to their fitness for making candles, &c., that being unimportant to the Chemist and Druggist. But for perfumery purposes, for the polishing of furniture, and the "waxing" of thread, substitutes may with advantage be looked for; and the fitness for any of these purposes will indicate pretty well the fitness of the material in hand for other special purposes, which it would add too much to the length of the present paper to notice in full. I have also indicated the prices (quoted a few months ago, and, of course, subject to variation), and the melting point.

Spermaceti is too well known to call for any remark; stearine and paraffin greatly resemble it when pure, but the former is

* For a notice of the sulphites tried by Professor Polli, see the current volume of the "Pharmaceutical Journal," p. 37.

subject to a greasy, rancid odor, and the latter to the odor of coal tar; they are both more crumbly than spermaceti, the paraffin especially, being readily rubbed to powder, and both are purely white. China and Japan wax greatly resemble good block white wax in their general appearance, but are liable to become coated with a fine white efflorescence resembling the bloom upon many kinds of fruit; they have a toughness somewhat inferior to wax, and when a knife is forced into them, they break with a crackling sound; they are both almost destitute of odor, and what they have is not objectional: of the two, the Chinese wax most nearly resembles the product of the bee.

Carnauba wax, on the other hand, differs greatly from all the others. It is hard, brittle, and darker colored than the others; in physical properties it seems to hold a position between white wax and sulphur; it takes a fine polish when rubbed with any soft material, and is so hard as not to take finger-marks with the heat of the hand; it is suitable for furniture polishes, either alone or mixed with Japan wax or beeswax.

TABLE OF WAX SUBSTITUUES, SHOWING THEIR COMPARATIVE MERITS AND PRICES.

	For Thread.	Furniture.	Perfumery.	Melting Pt.	Price.
					s. d.
Genuine Block White Wax,	Good	Good	Good	145°	2 10
White Cake Wax, adulterated	Medium	Medium	Good	..	2 4
Jamaica Yellow Wax	Good	Good	Good	..	1 10
English ditto	Good	Good	Good	..	2 1
Spermaceti	Bad	Bad	Good	112°	1 5
Stearine	Bad	Bad	Good	144°	1 4
*Tree Wax, Japan	Med. Good	Medium	Good	115°	0 10
*Insect Wax, China	Med. Good	Medium	Good	118°	2 8
*Carnauba Wax	Bad	Good	Bad	192°	0 10
Paraffin	Med. Bad	Bad	Bad	131°	1 5

* In original packages of about 1¼ cwt. each. I am indebted to Messrs. Hodgkinson, Tonge, and Stead, upper Thames street, for samples and quotations.

The quality of some of these materials is subject to considerable variation thus, paraffin may be obtained quite free from odor; and if so, might possibly be used without disadvantage in the preparation of cold cream or pomades. It is probable that there are other variations besides odor and color, judging from the melting points. Miller quotes the melting point of paraffin as 110°: I found it melt at 133°, and congeal at 103°. China wax he states to melt at 182°: I found it melt at 133°,

and congeal at 108°. Japan wax I found melt at 128°, and congeal at 102°; the melting point quoted on the table being the mean of the two observations.

The melting point of stearine is liable to vary from very slight causes (see Miller's Chemistry); but so great a discrepancy as indicated above for China wax must surely be the result of a difference in the nature of the sample. The price quoted for Japan wax seems much below what its good properties would seem to justify. The qualities would probably become more uniform, and the prices would find a more reasonable level, if more extensive trial were made of these materials for the various purposes for which wax is at present used.—*Chem. and Druggist, Aug.* 15*th*, 1863.

ON THE REDUCTION OF CHLORIDE OF SILVER.

MM. Millon and Commaille have communicated to the French Academy an extremely elegant reaction, by which absolutely pure metallic silver may be precipitated from its ammoniacal combinations, with all the accuracy necessary for rigid analysis, and in such a division as to render it available in the arts.

The reagent employed is ammonio-subchloride of copper. When this substance is added to ammonio-nitrate or ammonio-chloride of silver, the whole of the silver is at once thrown down in the metallic state as a grey amorphous precipitate. The precipitate readily assumes a metallic lustre under the burnisher, and may be applied to the surfaces of wood, stone, etc. The reaction takes place so perfectly, that it may be employed either for the estimation of silver, or for the analysis of a mixture of sub- and protosalt of copper; every atom of silver thrown down representing one atom of sub-chloride of copper.

It is, however, especially valuable for reducing the chloride of silver residues of the laboratory. These are dissolved in ammonia, and the ammoniacal subchloride of copper added, when the metallic silver is at once obtained in its purity. Moreover, it is only necessary to digest the filtrate with a little powdered zinc in a closed flask, in order to again reduce the copper salt, and it is ready for a fresh operation. In this way, the same quantity of copper solution suffices for an indefinite number of precipitations.—*London Pharmaceutical Journal, August,* 1863.

ON THE PHYSIOLOGICAL PROPERTIES OF NITROBENZOLE AND ANILINE.

By Henry Letheby, M.B., F.L.S., etc.

It is on record that Thrasyas, the father of botany, was so skilled in the preparation of drugs, that he knew how to compound a poison which would remain for days in the living body without manifesting its action, and would at last kill by a lingering illness. Theophrastus speaks of this poison, and says its force could be so modified as to occasion death in two, three, or six months, or even at the end of a year or two years. The writings of Plutarch, Tacitus, Quintilian, and Livy, are full of instances of what seem to be this kind of slow and occult poisoning. In fact, until recently there has been a common belief among the unlearned that a skilful poisoner could so apportion the dose and combinations of certain subtle agents that he could destroy the life of his victim with certainty, and at the same time measure his allotted moments with the nicest precision, and defy the utmost skill of the physician and the chemist. Even so late as the sixteenth century this belief was shared by the learned of the medical profession; for we are told, in Sprat's "History of the Royal Society," that among other questions which were drawn up by the earlier Fellows to be submitted to the Chinese and Indians was, "Whether the Indians can so prepare that stupefying herb, *Datura*, that they make it lie several days, months, years, according as they will have it, in a man's body without doing him any hurt, and at the end kill him without missing half an hour's time?"

Modern toxicologists have long since discarded these notions, and have set them down to the vague fears and exaggerated fancies of the ancients, rather than to the sober contemplation of facts. But the account which I am about to give of the physiological properties of nitrobenzole will show that there is one substance, at least, which realizes to a great extent the extraordinary opinions of the ancients. This compound may be given to-day, and yet, if the dose be not too large, it shall not manifest its action until to-morrow or the day after, and shall then destroy life by a lingering illness, which shall not only defy

the skill of the physician, but shall also baffle the researches of the medical jurist. These facts are so remarkable, that they would be hardly credited if they were not susceptible of the proof of demonstration. They are likewise the more interesting and important from the circumstance that nitrobenzole is now a common article of commerce, and is accessible to every one.

In every manufactory where nitrobenzole and aniline are prepared on a large scale, the peculiar narcotic effects of these poisons are often observed. The vapors escaping into the atmosphere are breathed by the workmen, and cause distressing headache and a heavy, sleepy sensation. For the most part these effects are not serious, but are quickly relieved by fresh air and a mild stimulant, as a glass of brandy-and-water. Now and then, however, the workmen, from carelessness in their habits, expose themselves to the action of comparatively large quantities of these poisons, and then the effects are most dangerous. Two fatal cases of poisoning by nitrobenzole have been referred to me by the coroner for investigation during the last two years, and in both instances they were the results of careless manipulation. In one case a man, forty-three years of age, spilt a quantity of the liquid over the front of his clothes, and he went about for several hours in an atmosphera saturated with the poison. In the other, a boy, aged seventeen years, received a little of the liquid into his mouth while sucking at a siphon. The effects were nearly the same in both cases, notwithstanding that in one the poison was inhaled, and in the other it was swallowed. For some time there was no feeling of discomfort beyond that of drowsiness; gradually, however, the face became flushed, the expression stupid, and the gait unsteady,—the sufferers had the appearance of persons who had been drinking. Little by little this stupor increased, until it passed into profound coma, and in this condition they died. The progress of each case was much the same as that of slow intoxication, excepting that the mind was perfectly clear until the coming on of the fatal coma. This was sudden, like a fit of apoplexy; and from that moment there was no return of consciousness or of bodily power,—the sufferer lay as if in a deep sleep, and died without a struggle. The duration of each case was nearly the same; about four hours elapsed from the

time of taking or inhaling the poison to the setting in of the coma, and the coma lasted for about five hours.

After death there were no appearance of convulsions, but rather of narcotism and apoplexy. The face was flushed; the lips were livid; the superficial vessels of the body, especially about the throat and arms, were gorged with blood; the dependent parts were turgid; the blood was everywhere black and fluid; the lungs were somewhat congested; the cavities of the heart were full; the liver was of a purple color, and the gall-bladder distended with bile; the brain and its membranes were turgid, and in the case of the man there was much bloody serosity in the ventricles. Analysis discovered the existence of nitrobenzole in the brain and stomach, snd also of aniline.

These effects were so remarkable, that I determined to examine them still further by experiments on domestic animals. Dogs and cats were submitted to the action of from thirty to sixty drops of nitrobenzole which had been well washed with dilute sulphuric acid and water to free it from every trace of aniline. The poison was generally administered by pouring it into the mouths of the animals, but sometimes it was given by means of an œsophagus-tube. When the nitrobenzole had come into contact with the mouth, it always caused discomfort, as if from unpleasant taste, and there was profuse salivation. Its local action on the stomach, however, was never very great, for there was rarely any vomiting until the setting in of nervous symptoms, and this seemed to be due to sympathy rather than to any local irritation of the stomach. Two classes of effects were clearly observed; there was either the rapid coma which characterized the operation of the poison on the human subject, or there was a slow setting in of paralysis and coma, after a long period of inaction.

When the effects were speedily fatal, the animal was soon seized with giddiness and an inability to walk. The weakness of the limbs first appeared in the hind extremities, and was manifested by a difficulty in standing; but very soon it extended to the fore legs, and then to the head and neck. There was complete loss of voluntary power. The animal lay upon its side, with its head drawn a little back, and with its limbs in constant motion, as if in the act of walking or running. The

muscles of the back were occasionally fixed in spasm, and every now and then the animal would have a sort of epileptic fit. It would look distressed, would howl as if in pain, and would struggle violently. After this it would seem exhausted, and would lie powerless. The pupils were widely dilated, the action of the heart was tumultuous and irregular, and the breathing was somewhat difficult. For some time, however, the animal retained its consciousness, for it would look up, and wag its tail when spoken to; but suddenly, and often at the close of a fit, it would become comatose,—the eye would remain open, but the conjunctiva would be insensible to touch, and the movements of the limbs would nearly cease; the breathing would be slow and somewhat stertorous, and the animal would appear as if it were in a deep sleep. This condition would last until it died,—the time of death varying from twenty-five minutes to twelve hours after the administration of the poison.

When the action of the poison was slower, there was often no visible effect for hours or days. At first there was always a little discomfort from the taste of the poison, but this soon subsided, and then for a day or more the animal appeared to be in perfect health. It would go about as usual, would be quite lively in its movements, would eat its food heartily, and in fact would seem to be in no way affected by the poison. Suddenly, however, it would look distressed, it would have an attack of vomiting, and it would tumble over in an epileptic fit. When this had subsided, it was generally found that the animal was weak, or even quite paralysed in its hind extremities; and after two or three of such attacks, the loss of voluntary power would extend to the fore limbs. The animal would lie upon its side perfectly helpless, and then the progress of the case was much the same as that already described, except that it was considerably slower. Consciousness, for example, would be retained for days after the animal was paralysed, and, although it was quite unable to stand, it would take food and drink when they were put into its mouth. The condition in which it lay was most distressing: the look was anxious and full of fear; the limbs were in constant motion; and every now and then there would be a violent struggle, as if the animal was in a fit, or was making fruitless efforts to rise. This would last for days, and then

there would be either a gradual restoration of voluntary power with complete recovery, or death from exhaustion. The time that elapsed from the administration of the poison to the coming on of the first symptoms, namely, the epileptic fit, varied from nineteen hours to seventy-two, in most cases it was about two days, and the time of death was from four to nine days.

The *post-mortem* appearances were nearly the same in all cases, whether the death was quick or slow. The vessels of the brain and its membranes were extremely turgid; the cavities of the heart were full of blood; the lungs were but slightly congested; the liver was of a deep purple tint, and the gall-bladder distended with bile; the stomach was natural, without sign of local irritation; and the blood all over the body was black and uncoagulated. Whenever the progress of the case had been quick, and death had taken place within twenty-four hours, the odor of the nitrobenzole was clearly perceptible in the stomach, the brain, and the lungs; and there was always unmistakable evidence of the existence of aniline in the organs of the body. In the slower cases, the odor of the poison had often entirely disappeared; but generally there were distinct traces of aniline in the brain and urine, and sometimes in the stomach and liver; occasionally, however, no poison was found.

It has appeared to me that the facts which are here elucidated are very remarkable; for they not only indicate a rare circumstance in toxicology, namely, that a poison may be retained in the system for many days without showing its effects, but also that the poison may be changed into an entirely different substance. The importance of these facts cannot be overrated; they are alike interesting to the chemist, the physiologist, and the medical jurist; for without dwelling on a very possible occurrence,—namely, the criminal administration of this poison, with the knowledge that the effects would be delayed, that the symptoms would correspond to those of natural disease, that the progress of the case would be lingering, and that there would be either no discovery of poison in the body, or the discovery of a thing different from that administered,—it will be manifest that the study of these facts by the medical jurist is of public importance. To the physiologist they are also interesting, inso-

much as they indicate a reducing power in the animal body by the conversion of nitrobenzole into aniline. I have endeavored to ascertain whether this is due to a living or a dead process. In the first place, I find that dead and decomposing organic matter will effect the change alluded to; for when nitrobenzole is placed in the dead stomach, or is kept in contact with putrid flesh for several hours, there is a partial reduction of it into aniline. This may be the source of the poison found in the dead body; but, on the other hand, there is a great similarity in the physiological effects of nitrobenzole and those of aniline.

When aniline is given to dogs and cats in doses of from twenty to sixty drops, it causes rapid loss of voluntary power. The animal staggers in its gait, looks perplexed, and falls upon its side powerless. Its head is drawn back, the pupils are widely dilated, there are slight twitchings or spasms of the muscles, the breathing is difficult, the action of the heart is tumultuous, and the animal quickly passes into a state of coma. From this it never recovers, but remains upon its side as if in a deep sleep, and so dies in from half an hour to thirty-two hours.

The *post-mortem* appearances are much the same as the last: the brain and its membranes are turgid, the cavities of the heart are nearly full of blood, the lungs are but slightly congested, and the blood all over the body is black and uncoagulated. In every case the poison was easily discovered in the brain, the stomach, and the liver.

While, however, there seems to be a probable conversion of nitrobenzole into aniline in the living animal body by a process of reduction, there is also undoubtedly a change of an opposite character going on upon the surface of the body, whereby the salts of aniline are oxidized and converted into *mauve* or *magenta* purple. Some remarkable facts illustrative of this have been brought under my own notice, and have been the subject of clinical observation.

In the month of June, 1861, a boy aged sixteen was brought into the London Hospital in a semi-comatose condition. He had been scrubbing out the inside of an aniline vat, and while so doing he breathed an atmosphere charged with the vapor of the alkali, and became insensible. He did not suffer pain or

discomfort, but was suddenly seized with giddiness and insensibility. When he was brought to the hospital he looked like a person in the last stage of intoxication: the face and surface of the body were cold, the pulse was slow and almost imperceptible, the action of the heart was feeble, and the breathing was heavy and laborious. After rallying a little, he complained of pain in his head and giddiness. It was then noticed that the face had a purple hue, and that the lips and lining membrane of the mouth and the nails had the same purple tint. The next day, although the narcotic effects of the poison had passed away, he was still remarkably blue, like a patient in the last stage of cholera.

In the early part of last year, sulphate of aniline was given in rather large doses to patients in the London Hospital affected with chorea. The doses ranged from a quarter of a grain to seven grains. They were frequently administered, so that large quantities of the salt were taken in a very short time. In one case as much as 406 grains were taken in the course of a few days. No very remarkable effects followed beyond this, but after a few doses had been taken, and the system had become, as it were, saturated with the salt, the face became of a leaden-blue color, the lips and gums looked as if the patients had been eating black currants, and the nails also acquired a purple hue. The color faded a little before the time came for the administration of another dose, but soon after taking it appeared again; and this was the subject of constant observation. Dr. Fraser and Dr. Davies have recorded the results of their experience in five cases,* from which it would seem that although the free alkali is a powerful poison, the sulphate of it has but little action upon the animal body.

The general conclusions which appear to me to be warranted by these investigations are:—

1st. That nitrobenzole and aniline in its free state are powerful narcotic poisons.

2d. That they exert but little action, as local irritants, on the stomach and bowels.

3d. That although the effects may be quick, and the fatal

* "Medical Times and Gazette," March 8, 1862, p. 339.

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* "Medical Times and Gazette," March 8, 1862, p. 339.

termination of them rapid, yet nitrobenzole may remain in the system a long time without manifesting its action.

4th. That the salts of aniline are not nearly so poisonous as the free alkali.

5th. That in rapid cases of fatal poisoning, both the poisons are readily discovered in the dead body.

6th. That in slow cases the poisons may be entirely changed or eliminated, and therefore not recognizeble.

7th. That both of the poisons appear to be changed in the body by processes of oxidation and reduction, nitrobenzole being changed into aniline, and aniline and its salts into mauve or magenta.

In an appendix* are given notes of the two cases of fatal poisoning by nitrobenzole referred to in the paper, and a detailed account of twelve experiments on animals with nitrobenzole, and three with aniline; also the process employed for the recognition of aniline and nitrobenzole in the dead body, as follows:—

1st. The matters to be analysed were bruised in a mortar with a little water, and very slightly acidulated with dilute sulphuric acid.

2d. They were then submitted to distillation in a glass retort, —the distilled products being saved in three or four separate portions by changing the receiver at different stages of the process. In this way the presence of nitrobenzole was discovered.

3d. The residue in the retort, when reduced to a pulpy mass by the distillation, was treated with strong spirit of wine and filtered.

4th. The filtered alcohol solution which contained the aniline was treated with a slight excess of subacetate of lead, and again filtered. In this way gum, dextrine, etc., were removed.

5th. The filtered solution was treated with a slight excess of a saturated solution of sulphate of soda in water. In this manner the excess of lead was precipitated as a sulphate.

6th. The clear solution was then made very alkaline with caustic potash, and distilled to dryness from an oil-bath. The

* Preserved in the Archives.

aniline, together with ammonia from the animal matters, was found in the clear, colorless, distilled spirit.

7th. This was neutralized, or rather made acid, with a slight excess of dilute sulphuric acid, and evaporated nearly to dryness in a white porcelain dish. If necessary, the spirit was saved by distillation.

8th. The residue was of a pinkish color if aniline was present, and occasionally there were little streaks of blue around the edges of the white porcelain dish. If the quantity of the saline residue was not more than a grain or so, it was at once tested by dissolving it in a few drops, or even in a single drop, of dilute sulphuric acid (1 to 1). A small portion of it was then placed upon a strip of bright platinum; and the platinum having been connected with the positive pole of a single cell of a Grove's battery, the liquid was touched with the negative pole: in a few seconds, if aniline was present, the liquid would acquire a bronze, a blue, or a pink color; the kind of color being dependent on the amount of aniline present,—bronze being the result of much aniline, and pink of a very little. In this way at least $\frac{1}{2000}$th part of a grain of aniline was easily recognized.

To another portion of the acid liquid placed upon a white porcelain plate, a little peroxide of lead or red prussiate of potash was added, and a blue or purple reaction followed. This test is not so delicate as the last, for it fails when the amount of aniline is less than the $\frac{1}{1000}$th of a grain.

Other tests may be resorted to if necessary, as when the quantity of aniline is large. Thus peroxide of manganese or bichromate of potash may be used in the same way as the red prussiate of potash in the last experiment; but these tests will not answer with less than the $\frac{1}{500}$th of a grain of aniline. Lastly a drop of a solution of chloride of lime may be added to the acid liquid, and if the quantity of aniline exceeds the $\frac{1}{100}$th part of a grain it will cause a purple reaction.

9th. If the quantity of saline residue from the last operation is large, and there is reason to believe that much ammonia is present, this alkali must be got rid of, for it greatly interferes with the success of the color-experiments. The residue, therefore, is made moist with water, and rubbed down with about

twice its bulk of neutral carbonate of soda. It is then exposed to the air for a short time until the odor of ammonia has passed away. It is then treated with strong alcohol, filtered, acidulated with dilute sulphuric acid, and again evaporated. The aniline is now fit for the color-experiments.

There are no fallacies to these experiments; for although, as I have elsewhere shown, strychnia will give nearly the same color-reactions, yet in the first place this alkali is not volatile like aniline, and will not therefore distil over as the latter does; and in the next place, while the best effects, in respect of color, are developed with dilute acid and aniline, strychnia requires the concentrated acid. These differences are sufficient to prevent any embarrassment as regards the two alkaloids.—*Lond. Pharm. Journ., September*, 1863.

METHODS OF TESTING THE PURITY OF ALCOHOLS AND ETHERS.

It is well known that compound ethers are always liable to contain small quantities of water and of alcohol, even when they have been carefully rectified and dried. Alcohols also frequently contain traces of compound ethers. These impurities are difficult to separate, and often not easily detected. M. Berthelot gives the following elegant and efficient means for their recognition:—

"1. I take as a starting-point the fact that a compound ether, if pure, is decomposable by an alkali, by saturating an equivalent weight of this alkali. By this means, as I showed about ten years ago, the analysis of ethers and analogous compounds is founded on an alkalimetric test, based on the use of a standard solution of baryta.

"2. By means of the same liquid the smallest quantities of compound ethers may be recognized and estimated in alcohol or in simple ethers, provided these bodies are not alterable by alkalies. Ten cubic centimetres of a standard solution of baryta, and a well-known weight of the body to be tested, are enclosed in a flask. It is then heated for about a hundred hours at 100°; if the alcohol is pure, as is oftenest the case with ordinary alcohol, the standard of the baryta does not change.

Amylic alcohol, on the contrary, almost always contains a small quantity of compound ethers, as also does ordinary ether, even after digestion on milk of lime.

"Glycol prepared by the ordinary methods, and rectified to a certain point, is particularly impure. I have found in it as much as 22 per cent. of combined acetic acid, corresponding to 40 per cent. of monoacetic glycol. This fact may occasion more than one error, and the knowledge of it will be useful to chemists occupied with this curious substance.

"To recognize the presence, without estimating, of a neutral ether in an alcohol, I heat the alcohol with twice its volume of water, for twenty hours, at 150°. Most of the neutral ether changes into acid.

"3. The presence of a free acid in an alcohol or an ether is so easily recognized that I need not stop to describe the process. Formic ethers, for instance, are always acid; but they decompose so promptly as to prevent the exact estimation of the free acid. The free acid of other ethers, on the contrary, can be precisely estimated.

"4. The presence of a small quantity of water in a neutral ether may be detected by heating this ether to 150° during twenty or thirty hours; the water decomposes an almost equivalent quantity of ether into acid and alcohol. The acid is then estimated by a standard solution of baryta. On submitting acetic ether carefully purified by the ordinary methods to this test, it will obstinately retain one per cent. of water, which is with great difficulty eliminated.

"5. The presence of a small quantity of water in alcohol may also be detected by mixing the alcohol with a perfectly anhydrous compound ether, tested as above. It is then heated for twenty or thirty hours at about 150°. If the alcohol is anhydrous, the mixture should not become acid.

"6. The presence of a small quantity of alcohol in a neutral and anhydrous ether, acetic ether for instance, may be detected by heating the ether with a known weight of quite pure acetic acid. The standard of the acid will diminish according to the amount of alcohol."—*Lond. Pharm. Jour., September*, 1863.

HOP BITTER IN THE CRYSTALLINE FORM.

By Dr. J. C. Lermer.*

No substitute has ever been found for hops in the manufacture of beer; in fact, this plant seems to possess certain principles which render it peculiarly adapted for brewing. Besides the tannin, whose corrective influence on the injurious excess of protein compounds is well known, the strobules of hops contain other less known principles, which have also a most important influence on the qualities of beer. Ives was the first to direct our attention to a bitter principle contained in the yellow pollen of hops, and called this pollen lupulin (*Annals of Philosophy*, New Series, Vol. i., p. 199). Lupulin is naturally no definite chemical substance, but an organized compound of ethereal oil, resin, wax, &c.

I have, however, succeeded in separating the bitter principle in a pure and distinct crystalline form in the following manner:

15 lbs. of fresh hops are exhausted with 60 lbs. of ether. The ethereal solution is filtered and reduced to a syrupy consistence, and the residue allowed to stand for forty-eight hours, when a large amount of palmitic myricyle crystallized out. This being insoluble in alcohol of 90 per cent. may easily be separated from the bitter mother liquor. The alcoholic solution is again reduced to an extract, redissolved in ether, and the ethereal solution shaken with "strong solution of soda or potash till the alkaline liquor remains nearly colorless." In this way most of the resinous matter is removed. R. Wagener considers the bitter principle to consist of quercitron. If this were correct we should find it in the alkaline washings, but these contain principally resinous matter, and an appreciable amount of the new bitter principle.

I am investigating this alkaline liquor still further to ascertain its composition. The supernatant ethereal solution, which contains the principle amount of the bitter, has also in its turn absorbed a considerable quantity of alkaline solution, so as to have a strong alkaline reaction and dark-brown color. It is

* Condensed from *Dingler's Polytech. Journ.*, July, 1863, p. 54.

shaken with pure water, which removes the alkali and bitter principle, leaving only impurities in the supernatant ethereal stratum.

The watery solution is mixed with a neutral solution of sulphate of copper, when a copious blue precipitate is produced, consisting of one bitter principle and oxide of copper. This precipitate is well washed and drained, and consists of fine blue crystalline needles, perfectly soluble in excess of ether, a circumstance which proves it to be a distinct combination of hop bitter and oxide of copper. The hop bitter has, in fact, acid properties; it, combined with the alkali, allowed water to remove the potash or soda salt from the ethereal solution, and the latter in contact with sulphate of copper gave rise to a double decomposition, forming sulphate of potash or soda and a copper precipitate. The well-washed precipitate is redissolved in ether, a current of sulphuretted hydrogen passed through the solution, the filtered ethereal liquor evaporated to a syrupy consistence in an atmosphere of carbonic acid, and allowed to stand for twenty-four hours, when it will set into a compact crystalline mass, from which the still adhering impure mother liquor may be removed by washing with nitrobenzole, and the remaining crystals drained on plates of gypsum.

The pure white crystals when exposed become soon colored, moist, and glutinous, resembling in this respect the yellow pollen of hops itself. They are brittle, brilliant rhomboidal prisms, insoluble in water, soluble in alcohol, ether, chloroform, sulphide of carbon, benzol, oil of turpentine, &c., their solution has a pure bitter taste, and acid reaction.

The composition of the copper salt corresponds to the following formula:

$$CuO,C_{32}H_{25}O_7,$$

which corresponds to the following centesimal proportions:

			The values actually found were,— 1st experiment.	2nd experiment
CuO	= 39·7	= 12·70	12·5	12·9
C^{32}	= 192·0	= 61·40	61·42	60·96
H^{25}	= 25·0	= 7·99	7·48	7·10
O^7	= 56·0	= 17·91		
	312·7	= 100·00		

The hop bitter, or bitter acid, has some analogy with other bitter principles of plants. According to Lucks, absinthiin has the formula,

$$C_{16}H_{10}O_4HO,$$

which, when multiplied by 2, gives—

$$C_{32}H_{20}O_8 2HO,$$

or

$$C_{32}H_{22}O_{10};$$

and according to Mayer, jalappinolic acid is—

$$C_{32}H_{33}O_6.$$

and jalappinol—

$$C_{32}H_{31}O_7$$

Besides the above bitter acids hops contain two other crystalline principles, which Dr. Lermer is still investigating, and he adds that hops, like opium and cinchona bark, contain various crystalline principles.—*Chem. News, Lond., Aug.* 29, 1863.

ON QUINONE.

By Professor A. W. Hoffman.

The easy and perfect transformation of betaphenylenediamine into quinone, which process I have described in a previous paper (*Comptes-Rendus*, vol. lvi. p. 995), has led me to study the action of oxidising agents on some other derivatives of the phenic series.

Aniline, submitted to the action of a mixture of peroxide of manganese and weak sulphuric acid, gives appreciable quantities of quinone, which sublimes, while the residuum contains manganic and ammonic sulphates.

$$\underbrace{C_6H_7N}_{\text{Aniline.}}+2O=\underbrace{C_6H_4O_2}_{\text{Quinone.}}+H_3N.$$

But this equation represents but one phase of the reaction; the greater part of the aniline undergoes greater alteration.

The experiment succeeds much better by treating benzidine in the same way. Submitted to the action of heat, the mixture instantaneously disengages torrents of quonine, which condenses in beautiful needles in the receiver. Benzidine seems to change molecularly into quinone.

$$\underbrace{C_{21}H_{12}N_2}_{\text{Benzidine.}}+H_2O+3O=\underbrace{2C_6H_4O_2}_{\text{Quinone.}}+2H_3N.$$

While preparing quinone by the oxidation of aniline the idea naturally occurred to me to study the reciprocal reaction between these two bodies.

The brownish-red liquid obtained by dissolving quinone in aniline is soon converted into a mass; the crystalline product of the reaction being insoluble in water, alcohol, and ether, it cannot be purified by crystallisation; the quinone and aniline should be made react in presence of a large quantity of boiling alcohol. The brown solution on cooling deposits in brownish-red flakes of almost metallic lustre, which, by simple washing in alcohol, are obtained perfectly pure.

Submitted to analysis, the new substance has given figures according with the formula—

$$C_{13}H_{14}N_2O_2=\left.\begin{matrix}(C_6H_5\\(C_6H_2O_2)''\\H_2\end{matrix}\right\}N_2.$$

The complementary product of the reaction is easily eliminated from the mother water of the brown crystals. The saline residuum obtained by adding hydrochloric acid, and evaporating to dryness, is a mixture of hydrochlorate of aniline and hydroquinone, which are easily separable by ether.

The hydroquinone dissolves while the salt of aniline remains insoluble. By evaporating the ethereal solution, I obtained colorless needles of hydroquinone, with all the prominent characteristics distinguishing this remarkable body. The aqueous solution treated by ferric chloride immediately deposited green crystals with a gold reflection of intermediary hydroquinone.

The action of quinone on aniline is then represented by the following equation:

$$\underbrace{2C_6H_7N}_{\text{Aniline.}}+\underbrace{3C_6H_4O}_{\text{Quinone.}}=\underbrace{C_{18}H_2N_2O}_{\text{Brown crystals.}}+\underbrace{2C_6H_6O_2}_{\text{Hydro-quinone.}}.$$

The observations already recorded induced me to repeat the experiment described by M. Hesse (*Annalen Chemie und Pharmacie*, vol. cxiv. p. 307), in his excellent work on the quinone series.

By making chloranile (tetrachlorated quinone) react on aniline, M. Hesse obtained a body crystallised in brownish-red

flakes, resembling in its general properties the quinone derivative above described.

The composition of the substance obtained by chloranile, M. Hesse expresses by the formula—

$$C_{42}H_{31}Cl_4N_4O_4 = \left.\begin{matrix}(C_6H_5)_5\\(C_6Cl_2O_2)''_2\\H_6\end{matrix}\right\} N_5.$$

My analyses do not confirm this bold formula. The substance I prepared, whose properties are identical with those described by M. Hesse, contains less carbon, and is represented by—

$$C_{18}H_{12}Cl_2N_2O_2 = \left.\begin{matrix}(C_6H_5)_2\\(C_6Cl_2O_2)''_2\\H_2\end{matrix}\right\} N_2.$$

This is the formula of the quinone derivative with two atoms of hydrogen replaced by chlorine. The action of chloranile on aniline is partly analogous to that of quinone.

$$\underbrace{4C_6H_7N}_{\text{Aniline.}} + \underbrace{C_6Cl_4O_2}_{\text{Chloranile.}} = \underbrace{C_{18}H_{12}Cl_2N_2O_2}_{\text{Red-brown crystals.}} + \underbrace{2(C_6H_7N,HCl)}_{\text{Hydrochlorate of aniline.}}.$$

The formula I have proposed is further supported by the reciprocal action of chloranile and ammonia, which causes the formation of the chloranilamide discovered by Laurent (*Comptes-Rendus*, vol. xix., p. 323), and expressed by the formula—

$$C_6H_4ClN_2O_2 = \left.\begin{matrix}(C_6Cl_2O_2)'''\\H_2\\H_2\end{matrix}\right\} N_2$$

I am convinced that toluidine produces compounds analogous to both quinone and chloranile. The presence of toluidine in the aniline which served for M. Hesse's experiments will probably explain the greater amount of carbon found by this chemist.—*Chem. News, Lond., Aug.* 8, 1863.—*Comptes-Rendus*, June, 1863.

MYNSICHT'S ELIXIR OF VITRIOL.

"Nobilius et efficacius stomachicum in totâ republicâ medicâ nondum inventum esse, experientiam ipsam attestor."—Hadrian à Mynsicht, *Thesaurus et Armamentarium medico-chymicum.*

The statement of Mr. Johnson in the last number of the Pharmaceutical Journal (page 70,) that the *Elixir of Vitriol*

of Mynsicht is identical with the *Acidum sulphuricum aromaticum* of the Edinbnrgh and Dublin Pharmacopœias, is not quite correct, though it is true that the latter medicine is a simplified form of Mynsicht's preparation, which it is doubtless intended to represent. In the London Pharmacopœia of 1721, the following is the formula for

Elixir Vitrioli Mynsichtii.

℞ Cinnamomi,
Zinziberis,
Caryophyllorum, ana ℥iij.
Calami Aromatici ℥j.
Galangæ minoris ℥iss.
Foliorum Salviæ,
Menthæ crispæ, ana ℥ss.
Cubebarum,
Nucis Moschatæ, ana ℥ij.
Ligni Aloës,
Corticis Citri, ana ℥j.

Fiat pulvis. Adde

Sacchari Candi ℥iij.
Spiritûs Vini lb.iss.
Olei Vitrioli lb.j.

Extrahe tincturam digerendo dies viginti s.a. deinde filtra ad usum.

In the succeeding Pharmacopœia, that of 1746, this preparation is replaced by the following:

Elixir Vitrioli acidum.

℞ Tincturæ aromaticæ M. lb.j.
Spiritûs vitrioli fortis, olei dicti, P. ℥iv.

Misce gradatim, et postquam fæces subsederint per chartam cola.

In the Pharmacopœia of 1788, Elixir of Vitriol is omitted, the College ordering in its place, *Acidum vitriolicum dilutum*, which, under the modernized name of *Acidum sulphuricum dilutum*, has been continued in all subsequent editions.

As the mixing of sulphuric acid with alcohol gives rise to the formation of sulphovinic acid, it is obvious that these elixirs may differ in chemical composition from *Dilute Sulphuric Acid*.—D. H. *Lond. Pharm. Journ., Sept.*, 1863.

NEW PROCESS FOR THE COMMERCIAL MANUFACTURE OF ANILINE.

By H. Volh.*

The author recommends the following, which he states he has experimented with on a large scale:

A concentrated solution of hydrate of potassium or sodium and of glucose are introduced, together with the nitrobenzole, into a distilling apparatus. In the course of a few moments the mixture becomes heated, and vapors of aniline and nitrobenzole are given off. As soon as the action has moderated a little, a current of steam is passed through the mixture, which carries away all the aniline formed. The condensed products are returned to the still, and rectified by a second distillation by means of a jet of steam. To avoid loss, the aniline which is dissolved in the condensed water is separated by the addition of a little common salt or sulphate of soda. It is not necessary to make use of superheated steam, the temperature of the vapor at a pressure of an atmosphere and a-half being more than sufficient. The author has tried the use of cane sugar in place of glucose; the reduction takes place just the same, but the yield of aniline it smaller.—*Chem. News, Lond., Aug.* 8, 1863.

PREPARATION OF CHLORIDE OF LIME.

By C. Schrader.†

The author gives the following as the conditions under which a good chloride is obtained, which will keep its strength for a long time:

1. The lime employed must be free from iron and alumina. The hydrate may contain from 6 to 12 per cent. of moisture without any injury to the result.

2. The chlorine must be passed slowly to the hydrate of lime. If this precaution is neglected, the absorption may be so rapid as to produce an elevation of temperature, and cause the formation of some chlorate of lime.

3. When the hydrate is supersaturated with chlorine, the

* *Polytechnisches Centralblatt*, 1863, p. 624.
† *Polytechnisches Centralblatt*, 1863, p. 156.

chloride obtained quickly decomposes, consequently it is necessary to employ the hydrate and hydrochloric acid in proper proportions determined by practice. These proportions will necessarily vary with the strength of the hydrochloric acid and the purity of the manganese.

4. In proportion to the absorption of chlorine the affinity of the hydrate of lime for chlorine diminishes; so at the close of the operation the apparatus must contain free chlorine in a gaseous state, or the finished chloride will have an excess of hydrate of lime.

5. By attending to these points a product may be obtained, which will contain from 33 to 35 per cent. of bleaching chlorine, and which will lose only 3 or 4 per cent. of its strength in the course of a year.—*Chem. News, Lond., Aug.* 8, 1863.

AN IMPROVED PROCESS FOR THE PREPARATION OF CHROME YELLOW AND RED.

By J. Frauzoy. *

The author takes one hundred pounds of litharge, places it in a sufficiently large trough, and adds ten pounds of common salt, and enough warm water to make the whole into a thin paste. In the course of twenty-four hours the mixture swells up, and should then be well stirred. If it has become very thick, more water is added, until it reaches its original consistence. This is repeated as often as necessary, until the whole paste is decomposed, and chloride of lead formed, which generally happens in four or five days with the temperature at 68° or 70° F. Twelve pounds of nitric acid are now added; the mixture is again well stirred, and then left at rest for some hours. Fifteen pounds of alum dissolved in sufficient water to make a saturated solution are then added, and the mixture is once more well stirred. The chloride of lead is now changed into sulphate of lead oxide. After some hours the sulphate of lead, without pouring away the mother liquor, is added, stirring continually, to a solution of bichromate of potash. The latter must not be very strong, but should contain a pound of the bichromate in fifteen pounds of water.

* *Dingler's Polytech. Jour., July*, 1863, *p.* 156.

If a bright yellow shade is desired, the chromate of potash solution is to be added to the sulphate of lead quite cold, and in a small stream, the mixture being incessantly stirred. In this way a beautiful light chrome yellow is obtained. In the first process the solution of bichromate is made use of warm. In preparing an orange color the author uses carbonate of soda in place of alum. To make chrome red he adds a concentrated solution of bichromate of potash directly to the chloride of lead without forming either sulphate or carbonate. The mixture is well stirred, and in twenty-four hours a most beautiful chrome red is obtained.

Lastly, the colors are washed, the washings decanted, the last water is removed by pressure, and the color is made up and dried.—*Chem. News, Lond. Aug.*, 8, 1863.

ELECTRIC ILLUMINATION AT BOSTON,—PHOTOMETRICAL POWERS OF THE LIGHT.

(In a letter to Prof. B. Silliman, Jr., from Prof. William B. Rogers, dated Boston, August 14, 1863.)

I send you a short account of my observations on the power of the electric light exhibited with such striking effect by Mr. Ritchie, on the evening of the 6th inst. (the National 'Thanksgiving') in this city. Through his kindness, I was enabled to make a more satisfactory measurement of the illuminating force of the battery at the State House, than I had the means of doing on the occasion of its former exhibition on the 4th of July.

The battery in question, consisting of 250 Bunsen elements, having each an acting zinc surface of about 85 inches, and grouped in five battalions of 50 each, was arranged in the dome of the State House, and the carbon light and the photometric apparatus prepared for the purpose were placed in line across the same apartment, commanding a range of about fifty feet.

In view of the immense power of the light as observed in the previous experiment, I substituted for the 20-candle gas burner, used at that time as the standard of comparison, a unit ten times as great, formed by the flame of a kerosene lamp placed in the focus of a small parabolic reflector and throwing its con-

centrated light on a photometric screen of prepared paper fixed in front of it, at the distance of five feet. Before the observation, the lamp and reflector were so adjusted as to make the light cast on the near side of the screen equivalent by measure to the action of 200 candles.

This was done by the intervention of a kerosene lamp fitted up with a bridge of platinum wire for defining and restricting the height of the square flame. Such a lamp I find of frequent use in ordinary photometry, as, when suitably adjusted, it gives the light of about eight standard candles, and thus transfers the measurement in the protometer to the wider divisions of the scale. Being suspended in a balance of peculiar construction, its rate of consumption enables us to correct for any slight departure from the assigned illumination. The lamp thus regulated was placed with its flat flame 12 inches from the screen, while the lamp in the reflector was distant 60 inches—and the flame of the latter was adjusted until the effects on the screen were equalized.

A platform supporting the standard lamp and screen at the assigned distance was arranged to slide on a horizontal graduated bar, extending directly towards the carbon points, so that the screen should receive the rays from the electric light and from the reflector perpendicularly on its opposite faces. In making the observations, the platform was moved to and fro until the illumination on the opposite sides of the screen was judged to be equal, and then the measured distance of the two antagonizing lights from the screen gave by easy computation their relative illuminating power.

By a series of such observations, it was found that the carbon light had a force varying from 52 to 61 times that of the lamp with reflector, making it equivalent in illuminating power to the action of from 10,000 to 12,000 standard sperm candles pouring their light from the same distance upon the surface of the screen. This it will be remembered is the effect of the unaided carbon-light sending its rays equally in all directions from the luminous centre, and falls vastly short of the illuminating force of the cone of collected rays which was seen stretching like the tail of a comet from the surface of the great reflector. Judging from some recent experiments on the power of such a reflector

to augment the intensity of the light emanating from its focus, there can be no doubt that, along the axes of the cone when brought to its narrowest limits, the illuminating force of the carbon light as displayed on the State House could be rivalled only by that of several millions of candles shining unitedly along the same line.

In the above described observations, a thick screen was necessary on account of the great intensity of the lights to be antagonized. I need hardly say that the different color of the two lights added much to the difficulty of the measurements. But, by making in each case the extreme limits on either side, it was practicable to adjust the screen pretty accurately to equality of illumination.

The only previous experiment of precisely the same kind which I can recall is that of Bunsen, cited in the books, which was made with a battery of 48 elements. In this the photometric equivalent of the carbon light was estimated at 572 candles, or near 12 candles to the cell. My observations show a power more than three times as great, or about 40 candles to the cell, a difference due no doubt largely to the more intensive battery at my disposal and the cumulative effect of its arrangement. I suspect, too, that the elements in Bunsen's observation were of inferior size, but on this point I am without definite information.—*Am. Jour. Sci. and Arts, Sept.* 1863.

DETECTION OF NITRIC ACID IN WATERS BY MEANS OF BRUCIA.

Kersten (*Ann. Ch. u. Ph.*, cxxv. 224) finds that $\frac{1}{100}$ of a milligramme of nitric acid in a cubic centimetre of water may be plainly detected with help of brucia. The reagents must be specially purified before they can be employed. The water is repeatedly rectified over potash. The brucia is washed with pure water several times to remove nitrates. English sulphuric acid is mixed with 5 per cent. of carbonate of ammonia and $\frac{3}{4}$ distilled off in a glass vessel.*

* According to Goppelsröder (*Verhandl. der naturforsch. Gessells. in Basel.* 1861, 159) *fuming oil-of-vitriol* is free from oxyds of nitrogen. This observation has been confirmed in the Sheffield Laboratory.—[S. W. J.]

Kersten dissolves the brucia in 1000 times its weight of water, pours 1 c. c. of this solution into a champagne glass, adds 1 c. c. of the water to be tested, and finally 1 c. c. of sulphuric acid. The latter is allowed to flow down the side of the glass so as to gather beneath the water. At the plane of contact to the two liquids a rose-red zone immediately forms if the nitric acid be present in detectable quantity.—*Am. Jour. Sci. and Arts, Sept.*, 1868. S. W. J.

SOME ACCOUNT OF PAULLINIA SORBILIS AND ITS PRODUCTS.

By T. C. Archer, Esq.

The author remarked:—There is no more remarkable plant in the Order Sapindaceæ, if regarded from an economic point of view, than *Paullinia sorbilis*, although, as a plant, it is not well known to the botanical world. From its large seeds is manufactured the substance called "Guarana," which is extensively used in Brazil, Guatemala, Costa-Rica, and other parts of South America, as a nervous stimulant and restorative. The seeds deprived of their coverings are pounded into a paste, which, hardened in the sun, constitutes Guarana. It is used both as a remedy for various diseases, and also as a material for making a most refreshing beverage; and it adds another of those incidents so puzzling in human history of the discovery of such qualities in plants least likely to be suspected: such, for instance, as that the leaves of Tea, the seeds of Coffee and Cacao, the leaves and twigs of the various American Ilexes, and other plants should have this wonderful restorative effect on the nervous system, and that this should not be a mere vague notion, such as attaches to thousands of other plants, but that it should really depend upon the presence of a chemical principle, the same in all, and the operation of which can be satisfactorily explained. The presence of an alkaloid, which he called Guaranine, was discovered some years ago in Guarana, by Dr. Theodore von Martius, of Erlangen, but its identity with Theine was soon established, and subsequent analyses, especially one by Dr. Stenhouse in 1856, proved that not only was the active principle of Guarana identical with Theine, but that as far as is

known, no other substance yields it so abundantly, the amount being 5·07 per cent. as against good black tea, which yields 2·13, and coffee from 0·8 to 1·00. The mode of using the Guarana is curious and interesting. It is carried in the pocket of almost every traveller, and with it the palate bone or a scale of the large fish (*Sudis gigas*), locally called "pirarucu," the rough surfaces of which form a rasp upon which the Guarana is grated, and a few grains of the powder so formed are added to water, and drunk as a substitute for tea. The effect is very agreeable, but as there is a large portion of tannic acid also present, it is not a good thing for weak digestions. Its remarkably restorative power has given it a further great reputation as an aphrodisiac. Another species of this genus, *Paullinia Cupana*, also enters into the composition of a favorite national diet-drink. Its seeds are mingled with cassava and water, and allowed to pass into a state of fermentation, bordering on the putrefactive, in which state it is the favorite drink of the Orinoco Indians.—*Lond. Pharm. Jour. Sept.* 1863, from *Proceedings of the Botanical Society of Edinburgh, in Gardeners' Chornicle.*

ON PHENIC ACID—ITS ACTION ON VEGETABLES, ANIMALS, FERMENTS, POISONS, VIRUS, MIASMAS, AND ITS APPLICATIONS TO HYGIENE, TO THERAPEUTICS, AND TO THE ANATOMICAL AND INDUSTRIAL SCIENCE.

By M. le Docteur Jules Lemaire.*

As the subject treated of in these papers is of considerable practical importance, we shall present our readers with a short abstract of them.

Phenic acid ($C_{12}H_6O,HO$) was discovered in 1834 by Runge, who has given it the name of carbolic acid. Laurent, who studied this body, and described many of its combinations, designates it under the name of phenic and hydrate of phenyle, because he objects to place it among the acids. Gerhardt gave it the name of phenol. It has also received the names of phenic alcohol, of spyrol, and of salicone. [In this country the acid is best known in trade as carbolic acid.]

It has been formed synthetically by M. Berthelot by passing

* Le Moniteur Scientifique, vol. iv., p. 649, and *passim*.

alcoholic or acetic acid vapors through a porcelain tube heated to redness. The acid is also obtained in the dry distillation of a benzoin, quinic acid, the resin of zanthorrea hastilis, castoreum, and chromate of pelosine. Gerhardt has obtained it from salicolic acid by the action of lime or baryta. Stædeler has found that the urine of man, the horse, and the cow contain it in quantities easily perceivable. It exists also in commercial creosote ; † but it is from the oil from gas tar, which contains it in considerable quantity, that it is obtained.

Preparation.—The oil from coal tar is submitted to fractional distillation. The part which passes over between 160° and 190° is treated with a hot saturated solution of caustic potash and some powdered potash. A mass of crystals is thus obtained, which may be separated by decantation of the fluid.

When this mass is dissolved in water the solution separates into two layers, one light and oily, the other heavy and watery. The latter is separated and treated with hydrochloric acid, which sets free the carbolic acid. To obtain it pure, it must be digested with fused chloride of calcium and re-distilled once or twice. After several rectifications, and by cooling slowly, it can be obtained in a solid colorless crystalline mass.

The pure acid has an odor resembling creosote ; the specific gravity = 1.065. It burns with a reddish flame ; boils between 187° and 188° C. It does not redden litmus, only making an oily stain on the paper. It is soluble to some extent in water, but is very soluble in alcohol, ether, and acetic acid, as well as in glycerin and the fixed and volatile oils.

The pure acid acts energetically on the skin. A weak aqueous solution coagulates albumen and the blood, and acts as a strong antiseptic. Putrid meat and fish, fæcal matters, and fermented urine instantly lose their disgusting odor when immersed in or treated with the solution.

† The substance sold commercially under the name of creosote is often only phenic acid more or less pure ; but the pure creosote, extracted from wood tar by Reichenbach, is a perfectly distinct body. It is to this latter creosote that wood vinegar, tar water, the soot and the smoke of wood owe their antiseptic properties. (Gerhardt, t. iii., p. 18.) According to M. Fairlie and M. Scrughain, this creosote would be a combination of phenic acid and hydrate of cresyle.

Chemically, phenic acid is a weak acid. It combines with metallic oxides, but the salts have little stability; carbonic acid decomposes them. Those with an alkaline base have always an alkaline reaction.

In consequence of the supposed little solubility of carbolic acid in water, it has hitherto been chiefly employed mixed with powders, as in the case of Smith and McDougall's disinfecting powder; but the author of these papers has by careful experiments determined that the pure acid is sufficiently soluble in water for the solution to possess the power of coagulating albumen, of arresting or preventing spontaneous fermentation, and consequently of destroying infection. The saturated solution acts also on plants and the lower animals as a violent poison, though containing but about five per cent. of the acid. The solubility of the acid may be considerably increased by the addition of from five to ten per cent. of alcohol or of acetic acid.

From the experiments which the author has made on the action of phenic acid on plants and animals, it appears that a very weak solution will instantly destroy the lowest forms of animal and vegetable life. The juices of vegetables are prevented from becoming mouldy by the addition of the smallest quantity of the acid. Herbs and shrubs watered with a stronger solution rapidly die.

The microscopic beings concerned in the production of putrefactive fermentations are as quickly destroyed by a weak solution, and the putrefaction is completely arrested. Parasitic and earth worms also are easily killed by a solution containing one half per cent., or by exposure to air containing but a small proportion of the acid. An injection of water containing one half per cent. of the acid brought away from a child a large quantity of *ascarides lumbricoides*, all dead. A stronger solution kills the eggs of ants and earwigs, and larvæ of butterflies, caterpillars, &c.

The author has studied the action of the acid on the mammalia with mice, guinea-pigs, dogs, and horses, as well as men.

Action on the Human Skin.—Immediately after the application of a thin coating of the pure acid, a sharp smarting is felt, which lasts about an hour. The epidermis becomes wrinkled, and in a short time the formation of a white body may be re-

marked wherever the acid has touched. This white coloration results from the action of the acid on albumen; it disappears by degrees, and is replaced by some congestion, which lasts about twenty days. This congestion presents all the characters of an intense inflammation, being attended with redness, heat, and swelling. If a small piece of the epidermis (which appears raised as in a blister) be stripped off no serum escapes. The epidermis becomes detached by degrees, and when the exfoliation is complete a brown spot remains, which testifies for a long time to the energetic action of the acid. After a number of experiments on his own arms, and the arms of his friends, M. Lemaire assures us that the smarting never lasts longer than an hour. The redness of the skin endures about twenty days, but the inflammation never extends beyond the part to which the acid has been applied.

Action on the Mucous Membrane.—The action of the pure acid on the mucous membrane is, of course, analogous to its action on the skin; acute smarting, shrivelling up of the epithelium, and a milky coloration being observed. The smarting does not last so long as on the skin, especially on such membranes as produce an abundant secretion; and the epithelium quickly returns to its normal condition.

Action on the Respiratory Organs.—From experiments on mice and horses, the author concludes that the higher animals may breathe the diluted vapor of the acid for a long time without discomfort or danger.

Mode of Action.—The general fact resulting from the author's experiments is that phenic acid acts on plants and lower animals as a violent poison.

When the action of the acid on a semi-transparent leaf is examined, it is easy to prove that it coagulates albumen, and that the parenchyma and epiderm are contracted. This explains how it is that microphytes and microzoons die so quickly in its presence. All animals with a naked skin, and those which live in the water, die sooner than those which live in the air and have a solid envelope. The difference appears to result from the power of absorption, which is much greater in the former than the latter.

When frogs are placed in a saturated solution (5 per cent.)

of the acid the skin shrivels and becomes milky from the coagulation of the albumen. The branchiæ of fishes also become white. This coagulation of albumen led the author to suppose that the death of the animals resulted from the coagulation of their blood. To verify this supposition, he examined, under the microscope, the action of the acid on the branchiæ of the larvæ of salamanders, in which the circulation of the blood is easily seen. He then observed that although the solution arrested the circulation instantaneously, it altered neither the form nor appearance of the blood-globules. All the change consisted in their immobility. When the blood is coagulated by mineral acids the form of the globules is changed. With carbolic acid nothing of the kind takes place. Besides this, a post-mortem examination of a dog and horse proved that the blood was not coagulated. Phenic acid, then, does not kill by producing coagulation of the blood! Its action on the blood-globules, however, leads M. Lemaire to think that these globules are living beings.

Insects exposed to a weak dose of the acid become asphyxiated, but they soon recover in pure air.

When a gramme or two dissolved in water are administered to a dog, the animal falls as if struck with lightning, but soon recovers again. The sudden fall the author ascribes to violent pain, and the rapidity with which it is absorbed and carried to the nervous centres.* It is on the nervous system, then, that phenic acid principally acts.—*Chem News, Aug.* 8, 1863.

(To be continued.)

NEW REACTION FOR VERATRIA.

Trapp, of St. Petersburg, has observed that the smallest traces of veratria dissolved in cold concentrated chlorhydric acid, giving a colorless solution, which, on continued boiling, assumes a red color that finally becomes very intense, and resembles that of permanganate of potash. This solution remains unaltered by standing for a long time.—*Am. Jour. Sci. and Arts, from Polytechnisches Notizblatt,* 1863, 96.

* Is not the action of the acid on the mucous surface rather against its rapid absorption?—Ed. Chem. News.

GLUTEN IN CRUST OF BREAD.

M. Barral has presented to the Academy of Sciences some remarks of much interest concerning the crust of bread and the gluten contained in it. He had recently shown that, when equally dried, the crust of bread is more highly azotized than the crumb; and he also showed that the crust was more soluble than the crumb in water. M. Payen had, it is true, previously pointed out this greater solubility of the crust, and had ascribed it to the conversion of the starch into dextrine during the baking. But M. Barral's experiments show another important fact. "If," he says, "we exhaust with water an equal quantity of dry crust and dry crumb of bread, we find that the soluble portion of the crust consists of from seven to eight per cent. of nitrogen, whilst the soluble portion of the crumb contains only from two to three per cent. The greater solubility of the crust consequently, depends upon the transformation which its gluten has undergone under the direct action of the 200° to 220° heat of the oven. The soluble portion of the crust is more highly azotized than the juice of meat." M. Barral added that he was still engaged with his experiments, which would throw some new light on panification.—*Amer. Jour. Med. Sci., Oct.* 1863.

VERMILLION ROCK SALT MINE AT PETITE ANSE, LOUISIANA.

One of the facts of scientific interest brought to light by the Southern rebellion is the discovery of an important deposit of rock salt of remarkable purity in the island of Petite Anse, in Vermillion Bay, on the Gulf coast of Louisiana. By the kindness of Mr. Geo. D. Colburn, a large specimen of this salt has reached us. Its analysis by Dr. J. L. Riddell, of New Orleans, gives the following composition: Chloride of sodium 98·88, sulphate of lime 0·76, chloride of magnesium 0·23, chloride of calcium 0·13,=100. This analysis, it will be seen, makes the Petite Anse salt almost pure.

Salt springs had been known on the island from an early period, but no suspicion existed of there being rock salt near the surface, until the late owner, Judge Avery, with the view to improve the flow of water from one of the saline springs, caused

an excavation to be made, when, at the moderate depth of only fourteen or fifteen feet from the surface, the laborers struck the bed of white rock salt, which they at first imagined must be ice. It was at once recognized, and proved of incalculable advantage to the Confederates, as well as a source of great wealth to the owner. The Island of Petite Anse (Little Elbow Island), so named from its shape, is a body of very fertile land, supporting rich crops of sugar cane and corn, besides forest trees, about 2½ miles long by 1½ wide aud containing about 2100 acres. It rises 170 feet above tide in the midst of a wide spreading marine swamp. The soil of the island is an umber-colored argillaceous sandy loom, capable of forming good bricks.

The salt is covered by a whitish, cream-colored solid smooth rock, at an average depth of about 19½ feet below the surface or 4½ feet below tide water. There is no moisture or brine in the deposit, the salt being compact, hard and perfectly dry. Our intelligent correspondent is not a geologist, nor does he send us any fossils with the salt. But the deposit is undoubtedly of the Tertiary age.—*Am. Jour. Sci. and Arts, Sept.* 1863.

ON THE DISTILLATION OF MIXTURES: A CONTRIBUTION TO THE THEORY OF FRACTIONAL DISTILLATION.

By J. A. Wanklyn, Esq.

There are many points in the boiling of mixtures which are obscure. The tension of the vapors at the temperature whereat the mixture boils, and the proportions in which the constituents of the mixture are present, are not the only factors which determine the relative rates at which the constituents distil. There have, for instance, to be taken into account the adhesion of the liquids to one another, and the vapor-densities of these liquids. On the present occasion I have to call attention to the influence of this latter element, which influence seems to have been lost sight of by most of those who have applied themselves to this subject.

Leaving out of account for a moment the influence of adhesion, and simplifying the influence of the proportion in which the ingredients are present by taking equal weights of two liquids of different boiling-points, we may set down the rates at which these ingredients will distil as determined by the ten-

sions of the liquids and the densities of the vapors. In the first instant of time the quantity of each ingredient which distils will be found by multiplying its tension at the boiling-point of the mixture by its vapor-density. It thus appears that the liquid with the highest tension will not of necessity distil the quickest, for what the other liquids want in tension they may make up by the greater density of the vapors which they give off. And so when we mix a more volatile with a less volatile liquid and proceed to distil the mixture, we shall now and then find that the less volatile liquid distils faster than the more volatile one. I will here bring forward an experiment to illustrate this point.

	Vapor-density.
Methyl-alcohol boils at 66° C.	1·107
Iodide of ethyl boils at 72° C.	5·397

I took 18 grammes of methyl-alcohol and 17 grammes of iodide of ethyl, mixed them, and distilled off rather more than one-third of the mixture. The distillate consisted of

6·0 grammes methyl-alcohol,
8·7 grammes iodide of ethyl,

14·7

which shows in this case the less volatile constituent had boiled the faster, the less volatile iodide of ethyl having a very much higher vapor-density than methyl-alcohol.

It will be obvious that when the vapor densities and tensions are inversely proportional, the mixture must distil over unchanged. This influence of vapor-density goes a great way to explain why homologous bodies are so difficult of separation by means of fractional distillation. The more complex the formula, the higher the boiling-point, but also the higher the vapor-density, and therefore the greater the value of the vapor. Why oils, etc., distil so readily in steam is also explained; for aqueous vapor is one of the lightest, while oily vapors are generally heavy.—*Lond. Pharm. Jour. Sept.* 1863.

THE WAX-TREE OF JAPAN.

"On this remarkable plant, the *Rhus succedanea* of botanists, the 'Bulletin de la Société d'Acclimatation' publishes an interest-

ing paper by M. Eugéne Simon, now at Nagasaki. The vegetable wax of Japan is one of the chief articles which that country exports. It is not exactly of the same nature as common wax, since it melts in summer at the common temperature; but this inconvenience is obviated in Japan by protecting the candles made with this wax by a coating of beeswax. It appears that in England a process has been discovered for increasing its consistency, since the demand for the article from that quarter has considerably increased of late. The tree itself might be easily acclimatized in the southern parts of France. It thrives on mountains and on stony and barren ground, unfit for other agricultural purposes. M. Simon has sent over about twenty kilogrammes of its seed for trial. The young trees are planted in Japan along the highways, when they are two years old, leaving a distance of about three feet between the stems; but if planted in squares, the distance must be double. The trees are kept low by lopping, and trimmed in the shape of pyramids. In the fifth year after planting, each tree yields on an average 4lb. of seeds; in the eighth year, 6lb.; in the 10th, 18lb.; in the 12th, 40lb.; in the 15th, 60lb.; in the 18th year the tree enters upon its decline; 400lb. of seed yield 100lb. of wax. At present 200lb. of this wax are sold in London at the price of £5; so that a plantation of 10,000 trees in their prime may produce £4,000. The seed is gathered toward the end of autumn, threshed, and then left to dry for a fortnight, after which it is slightly roasted. It is next crushed under a millstone, and the produce exposed to the heat of steam in canvas bags; the wax is then obtained by the action of a screw press. This wax is of the third or lowest quality: to bleach it, it is rasped and rinsed in water, and then exposed to the action of the sun and dew for three days. A still higher quality is obtained by repeating this operation."—*Lond. Pharm. Jour. Sept.* 1863, from *The Times.*

COMBINATION OF PROTIODIDE OF IRON AND MANNA.

The protiodide of iron, in the form of pills, is very commonly employed in France, and the preparation generally contains the protiodide with a certain proportion of honey pow-

dered liquorice, and powdered mallow. M. Foucher recommends a kind of sugar-plum (*dragée*), composed of protiodide of iron, purified manna in tears, and powdered liquorice and mallow. By the union of these substances, M. Foucher obtains a mass in which the combination of manna with the protiodide preserves the latter from any alteration, and it forms a true paste, which, when divided into pills or *dragées*, soften, by the heat of the hand. Each *dragée* broken into pieces presents internally the greenish color characteristic of the well prepared and well-preserved potosalt of iron. In this preparation, therefore, there are two essential conditions observed—namely, the preservation of the salt without chemical alteration, and its easy solubility in the digestive passages. But M. Foucher also believes that the manna, by its laxative operation and its stimulating the secretions of the digestive canal, would also act both in facilitating the absorption of the drug and preventing the tendency to constipation which is one of the most troublesome effects of the ferruginous preparations.—*Lond. Pharm. Journ., Sept.*, 1863.

ABSORPTION OF GASES BY CHARCOAL.

Dr. R. A. Smith* has given the following as the results of his experiments on this subject:

Charcoal abstracts oxygen from atmospheric air at ordinary temperatures.

The absorption of oxygen continues for a long time, but the greater part takes place during the first part of the time the charcoal and air are in contact.

Hydrogen, nitrogen, or carbonic acid are not absorbed at the same time as oxygen, from gaseous mixtures.

The amount of gas absorbed by charcoal is in some degree proportionate to the condensibility of the gas; but this is not the only determining circumstance, in the case of oxygen at least.

The separation of oxygen that is absorbed by charcoal cannot be effected without production of carbonic acid, even at 212° F., and more slowly at lower temperatures.

* *Proceedings of the Royal Society*, xii. 424.

The absorptive power of charcoal differs for different kinds very much, so does the capability of combining with oxygen; animal charcoal excels wood charcoal, in this respect.

Nitrogen and hydrogen absorbed by charcoal, diffuse into an atmosphere of other gases with a force equal to a three-quarter inch column of mercury.

Water expels mercury from the pores of charcoal instantaneously.

Dr. Smith concludes from his observations:—

That the selective character of porous bodies may be closely related to—

1. The condensibility of gases;
2. Attraction, and perhaps tendency to combine;
3. Capacity of combination.

That in any case the attraction which determines the condensation of a gas is exercised at a distance greater than the distance of the atoms or molecules in combination.

That the gases in porous bodies lie in concentric strata, around the particles of the solid, which strata are unequally attracted according to their distance.

That chemical attraction cannot be distinguished from physical attraction, though attraction may exist without effecting its ultimate result of combination, and that the influence of mass upon chemical action may be due to this connection.

That there is no evidence of the existence of a specific attractive force determining chemical change, but only evidence of combination.

Mr. Hunter, of Queen's College, Belfast, has also published some results relating to this subject.† He has adopted the method employed by De Saussure. The charcoal was heated to redness before each experiment, and, while incandescent, plunged into the dry gas confined by mercury. The absorption generally terminated at the end of twenty-four hours. The results obtained were as follows, for a temperature of 0° C., and pressure of 760 mm:—

† *Phil. Mag.*, xxv., 364.

TABLE II.

	Ammonia.		Carbonic acid.		Cyanogen.	
	Vol. absorbed reduced to 0° C. and 760 mm.		Vol. absorbed reduced to 0° C. and 760 mm.		Vol. absorbed reduced to 0° C. and 760 mm.	
	Experiment.	Mean.	Experiment.	Mean.	Experiment.	Mean.
Logwood	112·4 111·3 110·1	111·3	53·1 56·2	54·6	87·3	
Ebony	106·6 104·4 108·7	106·7	46·6 50·3 44·0	47·0	89·6	
Camwood	93·0 89·5	91·2	44·7 51·3 44·7	45.4		
Green Ebony	96·0 84·6	90·3	37·4 44·8 41·3	40·8		
Fustic (Cuba)	89·7 89·1	89·6	61·7 54·9	58·0		
Lignum Vitæ	88·2 89·2 83·0	89·0	47·2	47·2		
Boxwood	86·6 84·5	85·6	31·2 31·2 30·2	31·2	28·8	
Jamaica logwood	65·0 73·8	69·5	33·3	33·3		
Sapan wool	69·9 69·8	69·9	32·2	32·2		
Beech	54·6 61·3	58·0				
Rosewood	50·6	50·6				
Wistaria Sinensis	44·03	44·03				
Vegetable ivory	...	...	47·5 58·6 50·3	50·5	57·3	

The absorption was found to be very rapid in cases where the quantity of gas absorbed is large. The differences in the amount of absorption, sometimes considerable, are considered to be in part due to differences in the pieces of charcoal. In order to ascertain the influence of long-continued heating on the absorptive power of charcoal, a piece of boxwood charcoal was kept at a strong red heat for more than an hour. Its absorption was then found to be 79, while in the ordinary way of heating it was 85. It would appear from these results that dif-

ferent kinds of charcoal differ in their absorptive power for different gases. Logwood charcoal absorbs most ammonia; fustic charcoal most carbonic acid; and ebony charcoal most cyanogen.—*Chem. News, London, May* 23, 1863.

ON INHALATION OF NITROGLYCERINE.

By John M. Merrick, Jr.

Various experiments have been made by different observers* upon the action of nitroglycerine or glonoine upon the animal economy—the nitroglycerine, or its solution in alcohol, being administered by dropping it upon the tongue—the effects which have been noticed being generally acceleration of the pulse, headache and prostration, and in peculiarly susceptible persons, these symptoms greatly aggravated.

These experiments, though somewhat contradictory, are very interesting, both from a chemical and a toxicological point of view, but do not touch upon one matter, viz.: the effects of the inhalation of the vapor of glonoine—a subject to which considerable interest must attach itself when we consider the rapidity with which the symptoms develop themselves when only a fraction of a drop is placed on the tip of the tongue.

In preparing a quantity of nitroglycerine in 1859, I met with an accident, the result of which exhibits in a very marked and satisfactory manner the toxical properties of this curious substance, and shows the necessity for extreme caution in handling it, especially when mixed with a volatile and inflammable solvent, as alcohol or ether.

The nitroglycerine was prepared by allowing pure glycerine to drop from a pipette with a glass stop-cock, so adjusted as to allow from fifteen to twenty drops to fall in a minute into a mixture of equal volumes of the strongest nitric and sulphuric acids cooled by very cold water.

In repeated experiments I have found that, in spite of the precautions taken to cool the acids, it is impossible to avoid an accident now and then, since, when the action reaches a certain intensity, just as in the oxydation of uric acid or cotton, the ex-

* Vide Braithwaite's Retrospect of Practical Medicine, part xxxvii. p. 294.

periment ends in an explosion or a violent evolution of nitrous fumes. When such a result occurs in making glonoine, the bystander seldom escapes a severe headache, even though the experiment be conducted in the open air.

After glycerine equal to half the bulk of the mixed acids had dropped in, the whole was thrown into a large volume of cold water, thoroughly washed, drawn off with a pipette, dissolved in ether, and the ethereal solution evaporated on a water-bath. It was in this part of the preparation that the accident occurred which enables me to speak of the consequences which follow the inhalation of the vapor. The glass dish in which the evaporation was being conducted, by some mishap tipped over, spilling half its contents on the hot copper bath, and in a moment the room was full of the mixed vapor of nitroglycerine and ether. Although I stood directly over the water-bath to adjust it, and must have inhaled a large volume of the mixed vapor, no instant bad result followed, but in less than fifteen minutes a headache set in, slight at first, but increasing in intensity by degrees, until in an hour and a half it became almost intolerable. It was accompanied by a good deal of faintness and exhaustion, intolerance of light, and a feeling of great general distress and alarm, in addition to the racking pain. Relief was only obtained at length by the inhalation of a large quantity of ether, the insensibility produced by which was followed by broken and disturbed sleep lasting until the following day, which was marked by weakness, exhaustion, and slight headache. These unpleasant symptoms did not finally disappear for three or four days.

It may be remarked that, during all the time that the severe pain aud distress lasted, consciousness was never lost for an instant. In Mr. Field's case,* *two drops* of a solution containing only one drop of glonoine to ninety-one of rectified spirit produced loss of consciousness and other very alarming symptoms of narcotic poisoning.

The effects of glonoine upon different individuals are exceedingly different and contradictory. Two drops of a diluted solution containing only one drop of nitroglycerine in ninety-nine of alcohol produces alarming symptoms of poisoning in one person,

* Vide Braithwaite ut supra.

while another swallows two hundred drops of a similar solution with no other ill effects than a slightly "muddled" feeling in the head. I have experienced unpleasant feelings from tasting exceedingly minute quantities of *pure* nitroglycerine, such as headache, buzzing in the ears, with a feeling of nervousness and depression, although the action of the drug does not seem to be nearly so powerful or so rapid as when it is given in the form of alcoholic solution. Pure nitroglcyerine is volatile at ordinary temperatures—a fact which was accidentally discovered in drawing off with a mouth pipette some nitroglycerine which had just been washed with water. Headache and the usual symptoms immediately set in, though not a particle of the liquid touched my mouth or tongue.

The following experiment, which shows that some constitutions are susceptible to the action of one-fortieth of a drop of glonoine, was made with a solution of nitroglycerine containing two and one-half drops of the pure substance to ninety-seven and one-half of alcohol. The solution was dropped upon sugar, and the sugar allowed to dissolve on the tongue.

My general health being good, and my pulse being seventy-nine, about two and one-half hours after a full meal, I took *one* drop of the solution. In two minutes my pulse was ninety-four, with dull, throbbing headache; in five minutes the pulse was one hundred, the headache changing from the back to the front of the head; in ten minutes the pulse was down to eighty-eight, and in fourteen minutes back to its normal rate, seventy-nine, although the headache did not wholly pass off for fifteen minutes more. It will be noticed that a quantity of the solution was taken, equal to only one-fortieth of a drop of pure nitroglycerine.—*Am. Jour. Science and Arts, Sept.* 1863.

Walpole, Mass., July, 1863.

Abstract of the Minutes of the Philadelphia College of Pharmacy.

At a stated semi-annual meeting of the Philadelphia College of Pharmacy, held at their Hall, September 28th, 1863. Present 19 members.

The President in the Chair. In the absence of the Secretary from the city, William C. Bakes was appointed Secretary *pro tem*. The Minutes

of the last meeting were read and adopted, after which the Minutes of the Board of Trustees were read by A. B. Taylor, Secretary of the Board. The committee on the Internal Revenue Law not being prepared to make a report, an interchange of opinion took place with reference to that portion of the law going into effect on the 30th proximo. The Secretary of the Board of Trustees read a communication from E. B. Garrigues, asking the exemption of S. S. Garrigues from the payment of dues during his absence from the city. On motion it was referred back to the Board of Trustees with a negative recommendation.

On motion of Mr. Samuel F. Troth, Mr. John Horn and Mr. William Hodgson, Jr., were exempted from the further payment of their annual contributions, and retain their membership in the College.

A copy of the United States Coast Survey was presented to the College Library, by Mr. Thomas S. Weigand.

The Committee on the Herbarium made the following report, which was accepted and ordered to be entered on the Minutes:—"The Committee on the Herbarium report the reception of an interesting and extensive collection of several hundred plants, embracing also a number of European specimens, from Edmund A. Crenshaw of this city. The committee have paid attention to the preservation of the specimens, now composing the Herbarium, and have added to it, during the past season, a few plants collected in this immediate neighborhood. Signed,

GEORGE J. SCATTERGOOD,
W. R. WARNER,
THOS. P. JAMES."

It was, on motion, resolved that the Chairman of the Committee on Deceased Members, be requested to prepare a notice of the death of our late fellow member, Mr. Warder Morris, and insert it in the proceedings of this meeting, to be published in the Journal.

WARDER MORRIS was born October 3d, 1789, at Pottsgrove, Pa. He was placed in the store of John and Daniel Elliot, to qualify himself for business, and at twenty commenced on his own account at No. 45 N. Third st., where he continued to conduct the business of a Druggist and Pharmaceutist for forty-four years, retiring in 1853. As a business man his knowledge and experience were extensive, and his judgment good. His practice was distinguished by rigid economy and ready adaptation of means to ends.

From a pharmaceutist, who was formerly in his employ as an apprentice, we learn that he was seldom idle, nor ever permitted those about him to be so; he was a man of few amusements and few vices, but with many internal resources; he read much, and had a large stock of general information; conversed well, but not freely, using very few superfluous words, and much could always be learned from his conversations, particularly when his hearers knew him well enough to accommodate themselves to his peculiarities.

With earnest, active and energetic traits, he was not free from a rigid bluntness, which often shows itself in the manner and bearing of original characters, but his strict justice in dealing with others, and his dislike of

everything pretentious and showy, were marked characteristics, which won the esteeem of those who came in contact with him.

Our late fellow member was one of the founders of the Philadelphia College of Pharmacy, being very zealous in the determination to establish on a permanent basis, an Institution that should do credit to our profession. He was a member from the organization of the College, in 1821, to the time of his death, a period of forty two years—thirty years of which time he was a faithful member of the Board of Trustees.

In 1844 the College became financially embarrassed, on account of money borrowed from its members to build a Hall, at which time he was the first to step forward with an offer to relinquish half of his loan, (which was considerable), to relieve the Institution from its difficulty, and also labored much to induce others to do the same, a movement by which the College was placed on an independent footing.

He died at his home, in Philadelphia, on the 10th of March, 1863, in the 74th year of his age.

The Corresponding Secretary read a communication from Mr. Charles Murray, Secretary of the Argentine Pharmaceutical Society of Buenos Ayres, accompanying a donation of several numbers of the *Revista Farmaceutica*, published in that city, which the Corresponding Secretary was requested to acknowledge, and return the thanks of the College.

The question as to whether an apprentice in an "Eclectic" establishment would be eligible to graduate in this College, was decided in the negative.

Recommendation No. 27, for Honorary Membership, was proposed, and in accordance with the By-laws, laid over for action at the next annual meeting.

The Delegates from this College to the meeting of the American Pharmaceutical Association, held in Baltimore, not having prepared a formal report, Mr. William Evans, Jr., of the delegation, was invited to give an account of the proceedings. He stated that the delegates from this College were all present but one—the proceedings were of an interesting character, and the meeting well attended by adjournment on five different occasions, till Thursday, the Association adjourned *sine die*, to meet in Cincinnati on the third Wednesday of September, 1864. The report of the Committee on the Progress of Pharmacy was elaborate and full. Some thirty or forty new members were received into the Association.

Messrs. Ellis and Procter related a number of interesting facts connected with the meeting, and spoke in warm terms of their appreciation of the kindness and hospitality of the Baltimore Pharmaceutists.

The semi-annual election of Trustees, &c., was now ordered, Messrs. Charles Bullock, and John C. Savery acting as tellers, who reported the following as elected:

Trustees.

Wilson H. Pile,	Evan T. Ellis,
Charles Bullock,	Alfred B. Taylor,
William J. Jenks,	George J. Scattergood,
William Evans, Jr.,	William C. Bakes.

Committee on Deceased Members.

Edward Parrish, William Procter, Jr., Charles Bullock.

Committee on Herbarium.

George J. Scattergood, William Procter, Jr., Thos. P. James.

On motion the College adjourned.

WILLIAM C. BAKES, *Secretary pro tem.*

Editorial Department.

BRITISH PHARMACEUTICAL CONFERENCE.—In the July number of this Journal, a movement among English pharmaceutists was alluded to. Since then we are glad to find that that movement resulted in the call of a convention of all interested in the progress of pharmacy, whether pharmaceutical chemists, chemists and druggists, or druggists, on the 2d of September, at which time the meeting was held at New Castle, upon Tyne.

The meeting convened at Baker's hotel, at 11 o'clock, A. M. Mr. Dean was called to the Chair, and Mr. Brady to act as Secretary.

Letters were then read from various pharmaceutists expressing their sympathy with the movement, among whom we notice the names of Prof. Redwood, Prof. Bentley, and Daniel Hanbury, of London, and Mr. Mackay, of Edinburgh.

Mr. Deane then stated, at length, that the object of the meeting was "to establish an annual conference to be held in different parts of the country, for the purpose of affording a periodical opportunity of meeting our brethren in the provinces and discussing various subjects of the highest importance to us in our public and private relations." The speaker then showed in what particulars the pharmaceutical body at large needed reform; that ignorance was one of the greatest difficulties they had to contend with, and that the conference was a movement in favor of dispelling this ignorance and encouraging the spread of knowledge and a sound system of ethical rules of practice. He then pointed out the course to be pursued to bring the talent and ability of the body usefully to bear, and concluded by calling on Prof. Bentley to move the first resolution.

Prof. Bentley, after some preliminary remarks, then offered the following resolution:

"That it is desirable that an Association be formed, to be called the British Pharmaceutical Conference, for the purpose of holding in the provinces an annual meeting of those engaged in Pharmacy."

Dr. Attfield seconded the resolution which was then discussed, during which it was decided not to limit the membership to the Pharmaceutical Society, but to extend it to the other pharmaceutical classes. It was finally unanimously adopted.

A draft of a proposed constitution and by-laws was then introduced, discussed *seriatim*, and finally adopted as follows:

CONSTITUTION.

Art. I.—This Association shall be called the British Pharmaceutical Conference, and its object shall be the following:

1. To hold an annual Conference of those engaged in the practice, or interested in the advancement of Pharmacy, with the view of promoting their friendly reunion, and increasing their facilities for the cultivation of Pharmaceutical science.

2. To determine what questions in Pharmaceutical science require investigation, and when practicable, to allot them to individuals or committees to report thereon.

3. To maintain uncompromisingly the principle of purity in medicine.

4. To form a bond of union amongst the various associations established for the advancement of Pharmacy, by receiving from them delegates to the annual Conference.

Art. II.—Membership in the Conference shall not be considered as conferring any guarantee of professional competency.

RULES.

I. Any person desiring to become a member of the Conference shall be nominated in writing by two members and balloted for at a general meeting of the members, two thirds of the votes given being needful for his election. If the application be made during the recess, the Executive Committee may elect the member by a unanimous vote. Every member shall sign an obligation to conform to the rules of the Conference for the time being.

2. The subscription shall be 5*s*. annually, which shall be due in advance, upon July 1.

3. Any member whose subscription shall be more than two years in arrear, after written application, shall be liable to be removed from the list by the Executive Committee. Members may be expelled for improper conduct by a majority of three-fourths of those voting at a general meeting, providing that fourteen days' notice of such intention of expulsion has been sent by the secretary to each member of the Conference.

4. Every association established for the advancement of Pharmacy shall, during its recognition by the Conference, be entitled to send delegates to the annual meeting.

5. The officers of the Conference shall be a President, four Vice-Presidents, a Treasurer, two General Secretaries, one Local Secretary, and nine other members, who shall collectively constitute the Executive Committee. Three members of this Executive Committee to retire annually by ballot, the remainder being eligible for re-election. They shall be elected at each annual meeting by ballot of those present.

6 At each Conference it shall be determined at what place and time to hold that of the next year.

7. Two members shall be elected by the Conference to audit the Treasurer's accounts, such audited accounts to be presented annually.

8. The Executive Committee shall present a report of proceedings annually.

9. These rules shall not be altered except at an annual meeting of the members.

10. Reports on subjects entrusted to individuals or committees for investigation shall be presented to a future meeting of the Conference, whose property they shall become. All reports shall be presented to the Executive Committee at least fourteen days before the annual meeting.

A list of officers for the ensuing year was then brought forward by Mr. Parkinson, of Bradford. The gentlemen named were unanimously elected, as follows:

President—H. DEANE, F. L. S.
Vice-Presidents—T. Redwood, Ph. D., Sec. C. S., Prof. Bentley, F. L. S., M. R. C. S., J. B. Edwards, Ph. D., F. C S, R. W. Giles, F. C. S.
Treasurer—H. B Brady, F. L. S., etc.
General Secretaries—J. Attfield, Ph. D., F. C. S., R. Reynolds, F. C. S.
Local Secretary—J. C. Pooley.
Committee—S. Gale, F. C. S., T. B. Groves, F. C. S., D Hanbury, F. L. S., A. F. Haselden, B. S. Proctor, W. D. Savage, F. Sutton, F. C. S., J. P. Tylee, E. Wood.

It was decided to hold the next meeting at Bath.

A committee on adulterations was then appointed and requested to report at the next annual meeting. This committee to be Dr. Attfield, T. B. Groves, B. S. Proctor, Mr. Rimmingtom, and Mr. Sutton.

The persons present then enrolled themselves as members, when the meeting adjourned to 8 o'clock, P. M.

At the evening meeting a paper was read on weights and measures, followed by a discussion of that subject. Some cases of adulterations in drugs were then brought forward which elicited much interest, after which the members adjourned to partake of a supper.

We have read the account of this movement with interest, and earnestly hope it may be the beginning of a series of meetings that will evolve from the heterogeneous elements of British Pharmacy, results of a most gratifying character by furnishing a common ground upon which those elements can approach each other and be influenced for good by a generous spirit of emulation. Its success will, we believe, depend mainly upon the liberal feeling of the better educated class, and the unsparing devotion of time and labor on the part of a few zealous members like Jacob Bell.

We doubt the policy of meeting at the time and place of the British Association, for many reasons. First, the strictly scientific character of that body does not harmonize with such an one as that now initiated. Second, the scientific portion of the pharmaceutists will be more strongly attracted to the Association and cannot well serve two masters. Third, the better educated will have to reach down and encourage the less educated to raise themselves towards a better rule of practice, and a stricter code of ethics, all of which can be more effectually done by keeping clear of complicating influences. And, finally, the metropolitan pharmaceutists will have to rid themselves of the idea that in Pharmacy London is Great Britain, and gradually acknowledge the fact that good pharmaceutists may be found in the "Provinces," who only need scope for their talents to make themselves a name.

THE LATE MEETING OF THE ASSOCIATION.—In the beginning of this number our readers are presented with the Minutes of the late Meeting of the American Pharmaceutical Association. They are full and need no commentary here. The meeting was one of the most successful that has been held. Our Baltimore friends were a unit in their endeavors to make the Meeting succeed, and all passed off well. After the adjournment the mem-

bers were invited to join in an excursion with the pharmaceutists down the Chesapeake Bay as far as Annapolis in the steamer Pioneer. The afternoon proved auspicious, the boat comfortable, the company, many of whom were the wives and lady friends of the Baltimore members, were in the best mood to enjoy the occasion, whilst sweet music from time to time was discoursed by a band provided for the excursion. In sailing down the Patapsco the prominent features of the marine approach to Baltimore were all pointed out; not the least interesting of which were the forts which now cover the prominences on either side. Fort McHenry was approached closely, and slowly passed, which afforded a good opportunity to observe the ground and outbuildings. The boat stopped at Fort Carroll, and the company debarked to examine the structure, which is not more than half finished. It will be a work of great strength, and like Fort Sumter stands entirely out in the river which it completely commands. Arrived at Annapolis, the party again debarked and made a hurried visit to the State House, the Naval Hospital and the Governor's house, and soon after our steamer turned her bow to the northward, and returned us safely at our starting point about ten o'clock, P.M In the interval an excellent supper was provided and served in the cabin. Before parting, Mr. Parrish of Philada., on behalf of the strangers present, thanked the Pharmaceutists of Baltimore for their generous hospitality and unremitting kindness, to which Mr. Meakim of New York added a few remarks. None present on that occasion thought that they were the last words he would address to our Association in its collective capacity.

A Hint in regard to Funnels.—Prof. Procter: Sir,—Allow me to bring before your notice (though somewhat out of date at present) a slight improvement in funnels, so trifling, probably, no one thought worth while to mention it. Nevertheless, I think it worth some consideration. All the funnels which I came across, are so made that when you place them in a bottle they get so tight that there is no opening left for the air to escape when the liquid is poured into the bottle. Now what I propose is this: to have funnels made with a groove cut on the outside, which, though simple, would fully remedy the defect of the liquid returning up the outside of the funnel, and going to loss when you are pouring it into the bottle.

A Student of the College of Pharmacy.

Phila. Oct. 30th, 1863.

Our correspondent is not the first to experience the inconvenience to which he alludes. It is not unusual in porcelain funnels to notice a groove on the outside of the neck to permit the passage of the displaced air. To make such a groove in glass funnels as at present made, would add materially to their cost, as it would have to be effected by grinding. Possibly the glass blower might make a longitudinal depression on the neck, but there would be a corresponding protuberance within the neck which would be objectionable. Cannot our druggists effect some improvement?

First Outlines of a Dictionary of the Solubilities of Chemical Substances. By Frank H. Storer. One Volume in Three Parts. Part 2d. Cambridge. Sever & Francis, 1863.

The second part of this valuable work has been received from the publishers, through J. B. Lippincott & Co., of Philadelphia. It begins with "Convolvulinic Acid," and ends with "Oxide of Tin," making 226 pages, double column. A comparison with the previous number fully bears it out in the comprehensiveness of its grasp, and the extent of information on important substances in relation to solubilities. The author goes more in detail in proportion to the practical or scientific interest that attaches to the substances. The number of organic bodies is very large, and if the book served no other purpose than that of an alphabetical catalogue of chemical substances, it would be of great use. Among the more prominent items of interest to the apothecary may be instanced the following: Creasote, the Cyanides, Dextrine, Digitalin, Essential Oils, Ethyl Compounds, Ferricyanides and Ferrocyanides, Gallic and Gallotannic Acids, Glycerin, Arabin, Gun-cotton, Iodides, Lactic Acid and Lactates, Malic Acid and Malates, Mannite, Nitrates, Oxalic Acid, Oxalates and Oxides. When finished it will form a compend on the subject of solubilities, to be found no where else, and which will address itself particularly to the pharmaceutist, whose profession involves this quality of substances to a large extent. We offer the following extracts as examples of this number and recommend our readers to get the book.

CREOSOTE. (*Kreosote.*) Sparingly soluble in water. Miscible in all proportions with alcohol, ether, bisulphide of carbon, naphtha, eupion, acetic ether, and acetic acid of 1.07 sp. gr. It is only partially soluble in ordinary acetic acid. (Gorup-Besanez.) When pure, it is entirely soluble in ordinary acetic acid. (Vœlckel.) Soluble in sulphuric acid, with combination. No more soluble in dilute chlorhydric acid than in water. Soluble in 80 pts. of cold, and 24 pts. of hot water.

Soluble in 80 pts. of water at 18.75°. (Abl. from *Œsterr. Zeitschrift für Pharm.*, 8, 201, in *Canstatt's Jaresbericht, für* 1854, p. 75.) Creosote dissolves, especially when warm, phosphorus, sulphur, selenium; oxalic, tartaric, citric, boracic, and stearic acids; the fats, resins, and coloring matters (as cochineal, dragon's-blood, santal red, santal-yellow, orchil, madder-red, and saffron). When warm, it dissolves indigo. When hot, it dissolves many salts, which separate out again as the solution cools; for example, many acetates and chlorides.

OIL OF TURPENTINE. (*Spirits of Turpentine. Essence of Turpentine. Camphene* (of Deville).) $C_{20}H_{16}$" Almost entirely insoluble in water. Soluble in all proportions in absolute alcohol; and in 12 pts. of alcohol of 0.858 sp. gr., at 10° (Blanchet & Sell); in 7.4 pts. of alcohol, of 0.84 sp. gr., at 22° (Saussure); in 4 vols. alcohol, of 0.83 sp. gr., in 5 vols. alcohol. (Auduard.) 5 vols. oil of turpentine are miscible with 1 vol. of alcohol, and the mixture is not clouded by water, the water only slowly removing the alcohol. (Vauquelin.) Does not dissolve well in alcohol unless this be free from water; 100 pts. of alcohol, of 0.84 sp. gr. dissolve 13.5 pts. of it at 16.6° [T.] Soluble in strong alcohol, in benzin, and in strong wood spirit. After alcohol or wood-spirit have been so much diluted with water that they can no longer dissolve oil of turpentine, the addition of some benzin restores their solvent power. Far more readily soluble in ace-

tone than in ordinary alcohol. (Mansfield, *J. Ch. Soc.*, 1. 263.) Soluble in wood-spirit in all proportions, the solution being rendered turbid on the addition of water. (Gmelin.) Soluble in alcohol, ether, and glacial acetic acid. (Berthelot, *Ann. Ch. et Phys.*, (3.) 37. 225.) Insoluble in glacial acetic acid. (Deville.) Soluble in most of the volatile oils. Miscible with bisulphide of carbon (Lampadius), with chloroform (Huraut & Larocque) and the fatty oils (Wittstein's *Handw.*) Easily soluble in ether. (*Ib.*) Soluble in most of the volatile oils. (Braconnot.) Its solubility in alcohol is not increased, but, on the contrary, somewhat diminished, by the presence of nitric acid. (Deville, *Ann. Ch. et Phys.*, (3.) 27. 82). Decomposed by concentrated mineral acids. Soluble in acetate of ethyl, butyric acid, and fusel oil. (Berthelot, *Gm.*, 14. 258.)

GLYCERIN. Hygroscopic. Miscible in all proportions with water and alcohol. Insoluble in ether.

(*Hydrated Oxide of Glyceryl* or *of Lipyl.*)

$C_6H_8O_6 = C_6H_5O_3,3H\,O = \left.\begin{matrix}C_6H_5\\H_3\end{matrix}\right\}O^6$

Soluble in water. Also soluble in absolute alcohol, from which it is partially precipitated on the addition of an equal volume of ether. (Berthelot, *Ann. Ch. et Phys.*, (3.) 43. 262.) A small quantity of ether does not precipitate glycerin from its alcoholic solution, although it is insoluble in ether alone. (Wurtz.) Glycerin is not miscible with the fatty oils. (Parrish's *Pharm.*, p. 324.) Soluble in cold fuming chlorhydric acid.

An aqueous solution of sp. gr. (at 17.5°)	Contains per cent of glycerin of 1.26 sp. gr.*	Freezes at °C.
1.024	10	—1.25°
1.051	20	—2.5°
1.075	30	—6.25°
1.105	40	—17.5°
1.117	45	—26.25°
1.127	50	—31.25°@ [33.75°
1.159	60	Not freezing at —35°
1.179	70	
1.1204	80	
1.232	90	
1.241	100	

(Fabian, *Dingler's polyt. Journ.*, 1860, 155. 347.

Glycerin approaches very nearly to diluted alcohol in its solvent power. It dissolves all deliquescent salts, several metallic nitrates, chlorides, and sulphates, the alkalies, and several of the metallic oxides, as oxide of lead, in large quantities; it also dissolves many vegetable acids. (Pelouze.)

The solvent power of glycerin is between that of water and of alcohol. In general terms, substances may be said to be more soluble in glycerin the more soluble they are in alcohol. A high temperature greatly increases its solvent power. (Parrish's *Pharm.*, p. 236.) Most of the GLYCERIDES are insoluble, or but sparingly soluble in water. The compounds of glycerin with *baryta*, *lime*, [see Oxide of Calcium], and *strontia*, are soluble in water, from which carbonic acid does not precipitate them: they are also sparingly soluble in alcohol. (Chevreul)

GUTTA PERCHA. Insoluble in water or alcohol. Soluble in ether, caoutchin, and coal-tar naphtha. (Page, *Am. J. Sci.*, (2.) 4. 342.) Insoluble in boiling alcohol. Readily soluble in boiling oil of turpentine. Soluble in naphtha and in coal-tar. (Oxley, *Am. J. Sci.*, (2.) 5, 440.) Soluble in benzin. (Mansfield *J. Ch. Soc.*, 1. 261. Insoluble in water, alcohol, oils, alkaline solutions, or in chlorhydric or acetic acids. It softens and partially dissolves in ether, essential oils, and coal-tar naphtha. Its best solvent is oil of turpentine. Con-

* According to Fergusson Wilson, a sample of 1.26 sp. gr. contains 98 per cent of anhydrous glycerin.

centrated sulphuric acid slowly chars it; concentrated nitric acid also gradually oxidizes it. (Solly, *Rep. Br. Assoc.*, 1845, 32.)

Soluble in pure chloroform, in bisulphide of carbon, in rectified oils of turpentine, resin, gutta-percha, and tar; also in terebene, chlorhydrtate of terebene, and, slightly, in pure ether. Of these solvents, the two first mentioned are the best, and dissolve the gutta-percha at low temperatures. The other solvents act only at temperatures above 21°, and when the solutions obtained are cooled much below 16°, the gutta-percha is deposited as a granular mass. The length of time required to produce this precipitate depends upon the degree of cold; sometimes it requires several days, at others the exposure of an hour suffices to produce it. From its solutions in chloroform and bisulphide of carbon, the gum may be recovered in its natural state either by evaporating or by precipitating it with alcohol. But when any of the hydrocarbons are used as solvents, a portion is retained with such tenacity that it cannot be removed without decomposing the gum. Solutions of gutta-percha are precipitated by alcohol. Ether also precipitates it from the solution in chloroform. Crude gutta-percha contains a small portion of a soft yellow resin, soluble in alcohol, ether, and oil of turpentine. (Kent, *Am. J. Sci.* (2,) 6. 246.)

Insoluble in dilute alcohol; traces of it are dissolved by strong alcohol. Only about 0.15@ 0.22 p. c. of it is soluble in hot alcohol or ether (anhydrous). Soluble in cold bisulphide of carbon, and chloroform. Sparingly soluble in warm, insoluble in cold olive-oil. Partially soluble in cold, almost entirely soluble in hot benzin, and oil of turpentine. Unacted upon by solutions of the caustic alkalies, ammonia-water, saline solutions, carbonic acid water, or the various vegetable, and dilute mineral, acids. Unacted upon by fluorhydric acid, it is attacked by concentrated sulphuric, chlorhydric, and nitric acids. (Gerhardt's *Tr.*)

Payen finds in gutta-percha several resins [see under RESINS], and

Pure Gutta: which is insoluble in alcohol or ether. Soluble in cold chloroform, and bisulphide of carbon; and in warm benzin, and oil of turpentine.

Synopsis of the course of Lectures on Materia Medica and Pharmacy delivered in the University of Pennsylvania; with three Lectures on the Modus Operandi of Medicines. By Joseph Carson, M.D. Third Edition revised. Philadelphia. Blanchard & Lea. 1863. pp. 244. Octavo.

We acknowledge the receipt of this volume from the publishers; it is a valuable help to the student of Materia Medica at the University. It is elegantly gotten up in regard to paper and type. Dr. Carson's class, which is understood to be unusually large, will be gratified with the opportune appearance of this useful volume.

OBITUARY.—The newspapers of Monday, the 19th of October, briefly announced the sudden death of JOHN MEAKIM on the previous morning. It startled and grieved many friends—for his friends were all who knew him. Few, that they had known, had fulfilled the appointed duties of life so well, and had enlisted such general good will, with so little cause of reproach.

He early applied himself to the study of pharmacy; was an earnest, industrious student, and graduated in the New York College, with much credit, in 1836. His youth was promising; his manhood exceeded the

promise. He became a member of the College in 1839; was elected Secretary in 1842; Vice President in 1851; and President in 1854. From 1842, he was constantly a member of the Board of Trustees; either ex-officio or by election as Trustee. As Secretary, five years, he was remarkable for the neatness and method with which the details of his office were executed; as Vice President three years, and President, seven years he filled each position with eminent ability and general approval. As a member of the Board, he was always amongst the most attentive, useful and efficient; being as a committee-man so active and reliable, that he was constantly in requisition.

But in the shop was his chief honor. Faithful among the faithless, true to his trust where so few meet its exactions, he dignified the drudgery and weariness of the most arduous, self-immolating, ill-appreciated and ill-requited of professions. His uncompromising aversion to quackery and his refusal to contaminate himself with it were as rare as they were noble.

He exhibited extraordinary neatness and good taste in the fixtures, apparatus, and arrangement of his business; and these were appropriate incidents to the skill, and care, and scrupulous honesty, with which he dispensed medicines: faithfulness to duty, because it was duty, being evidently his first consideration. He fell at his post. While dispensing a prescription on Saturday evening, the measure dropped from his hand; he was found to be paralyzed on the left side; and though he did not, himself, apprehend the result, but spoke cheerfully in regard to it, he was carried home to survive but a few hours. Cut down in the midst of his usefulness, at the height of his fame, he has left but too few to sustain the character of which he was so fair an example. At a meeting of the College of Pharmacy of the city of New York, together with the members of the American Pharmaceutical Association resident in this city, previous to the funeral on the 21st inst., the following preamble and resolutions were unanimously adopted.

Whereas, by the dispensation of an overruling Providence, our associate and friend, John Meakim, has been suddenly taken from us, and we have met to testify our sorrow and respect, it is

Resolved, That in his several relations to the College of Pharmacy, as Student, Graduate, Member, Trustee, Secretary, Vice-President and President, he has ever endeared himself to his associates, by his earnest, generous and genial character, by his unremitted zeal, and the devotion of his fine talents to promote its objects, and increase its usefulness.

Resolved, That, standing as he did, by general consent in the foremost rank of pharmaceutists in this city, he ennobled our profession by his high-toned code of ethics; his excellent taste; his scorn of all the arts and gains of charlatanry; his honest, unselfish and faithful performance of duty,—faithful even unto death: and has left us an example worthy of our emulation.

Resolved, That we tender our sincere sympathy to his bereaved family; and that a copy of these resolutions, properly attested, be presented to them.

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